

Document Type: EA-Administrative Record
Index Field: Draft Environmental
Assessment
Project Name: Rock Island State Park
Easement EA
Project Number: 2017-01

ROCK ISLAND STATE PARK RECREATION EASEMENT

DRAFT ENVIRONMENTAL ASSESSMENT

**Great Falls Reservoir
Warren and White Counties, Tennessee**

Prepared by:
TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

May 2018

For further information, contact:
W. Douglas White
NEPA Compliance
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, Tennessee 37902-1449
Phone: 865-632-2252
E-mail: wdwhite0@tva.gov

This page intentionally left blank

CHAPTER 1 – PURPOSE AND NEED FOR ACTION

Purpose and Need

TVA has received a request by Tennessee Department of Environment and Conservation (TDEC) for an easement allowing their continued management of Rock Island State Park. TDEC's proposal would add new developed recreation opportunities within the state park and improve access to park facilities. Because the area is currently managed under a short-term operating agreement with TDEC, the long-term easement would allow the State to manage the area with greater operational and fiscal certainty.

In considering the request, TVA seeks the appropriate management of its reservoir lands in a manner that maintains the region's quality of life and other important values. The past and current agreement with TDEC for managing TVA's parcels at Great Falls has ensured that the area is actively managed to benefit the public. TVA's interest in considering this proposal also arises from its commitment to improve the area's economic base and support sustainable economic growth and to provide for public infrastructure needs.

The proposed action is also consistent with TVA's land use plan for the area. Completed in 2017, the Great Falls Reservoir Land Management Plan reflects TVA's preference to continue to manage these parcels for recreation use and meets TVA's objective to provide the public with quality, affordable public outdoor recreation opportunities.

Background

In 1971, TVA entered into a 30-year agreement with TDEC to manage the 367 acre area under a recreation easement. This agreement expired in 2001. Since 2001, the area has been managed under short-term license agreements for public recreation purposes, consistent with the previous easement.

TVA addressed the management of the two TVA parcels of lands on Great Falls Reservoir in its Reservoir Land Management Plan (RLMP) (2017). In the RLMP, Parcel 1 (19 acres) is allocated as Zone 2 (Project Operations) and Parcel 2 (343 acres) is allocated as Zone 6 (Developed Recreation). Under TVA's single-use allocation methodology and land planning practices, Zone 2 and Zone 6 are the only zones in which other public agencies or commercial entities may manage TVA land for public or commercial recreation opportunities. Therefore, the proposed action would be consistent with TVA's RLMP and planning policies.

The 1971 agreement with TDEC to manage 367 acres included both the lands above and below the Caney Fork River. However, TVA does not plan land which is below a reservoir's full summer pool elevation. This explains the discrepancy between the acreage figure of 343 acres for Parcel 2 in the Great Falls RLMP and the 367 acres in the easement.

Proposed Action

The State of Tennessee Department of Environment and Conservation (TDEC) has requested a 40-year term recreation easement over 367 acres of TVA-managed public lands for the purposes of public recreation, including up to 5 acres for commercial recreation. Since 1971, the lands have been managed by TDEC in conjunction with its management of the adjacent Rock Island State Park. The land is located on Great Falls

Reservoir, and along the Caney Fork River and Collins River in Warren and White Counties, Tennessee.

There are three main aspects of the proposal:

- Establishing a 40-year public and commercial recreation easement allowing management of the TVA lands by TDEC, including maintenance actions on existing facilities;
- Restoration and use of an historic mill for a mixed use restaurant, meeting space, and inn as well as making associated access improvements (e.g., parking), which together occupy a five acre area; and
- Issuing a separate permanent easement to the State of Tennessee allowing the Department of Transportation (TDOT) to reroute a portion of the state highway (SR 287) away from the historic mill location to provide better public safety, for better development of the property, and to improve access.

The 40-year agreement would provide an easement for public recreation purposes in the area, with the exception of the 5-acre area at the historic mill which would be for commercial recreation purposes.

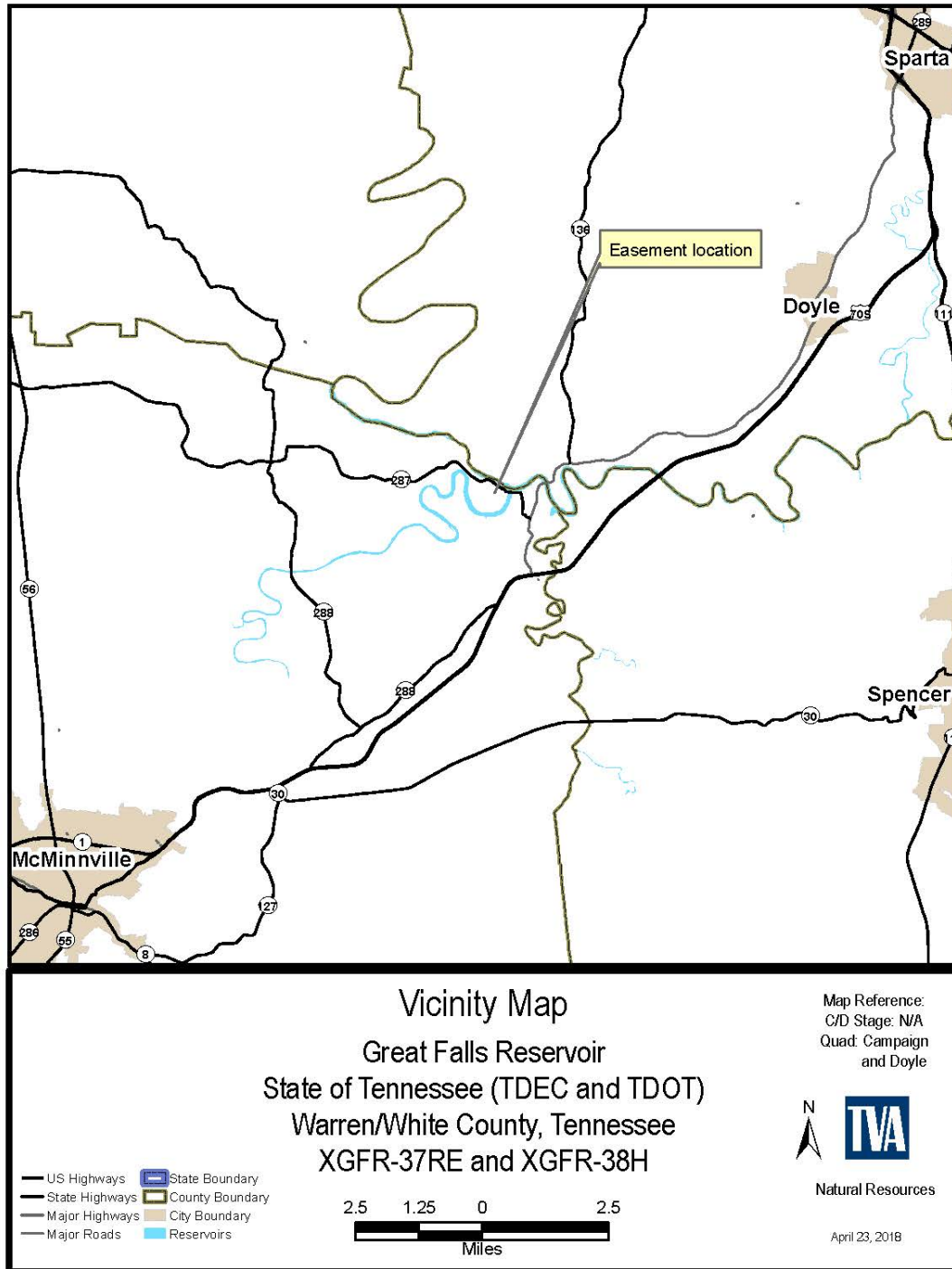


Figure 1. Great Falls Recreation Easement - Vicinity Map

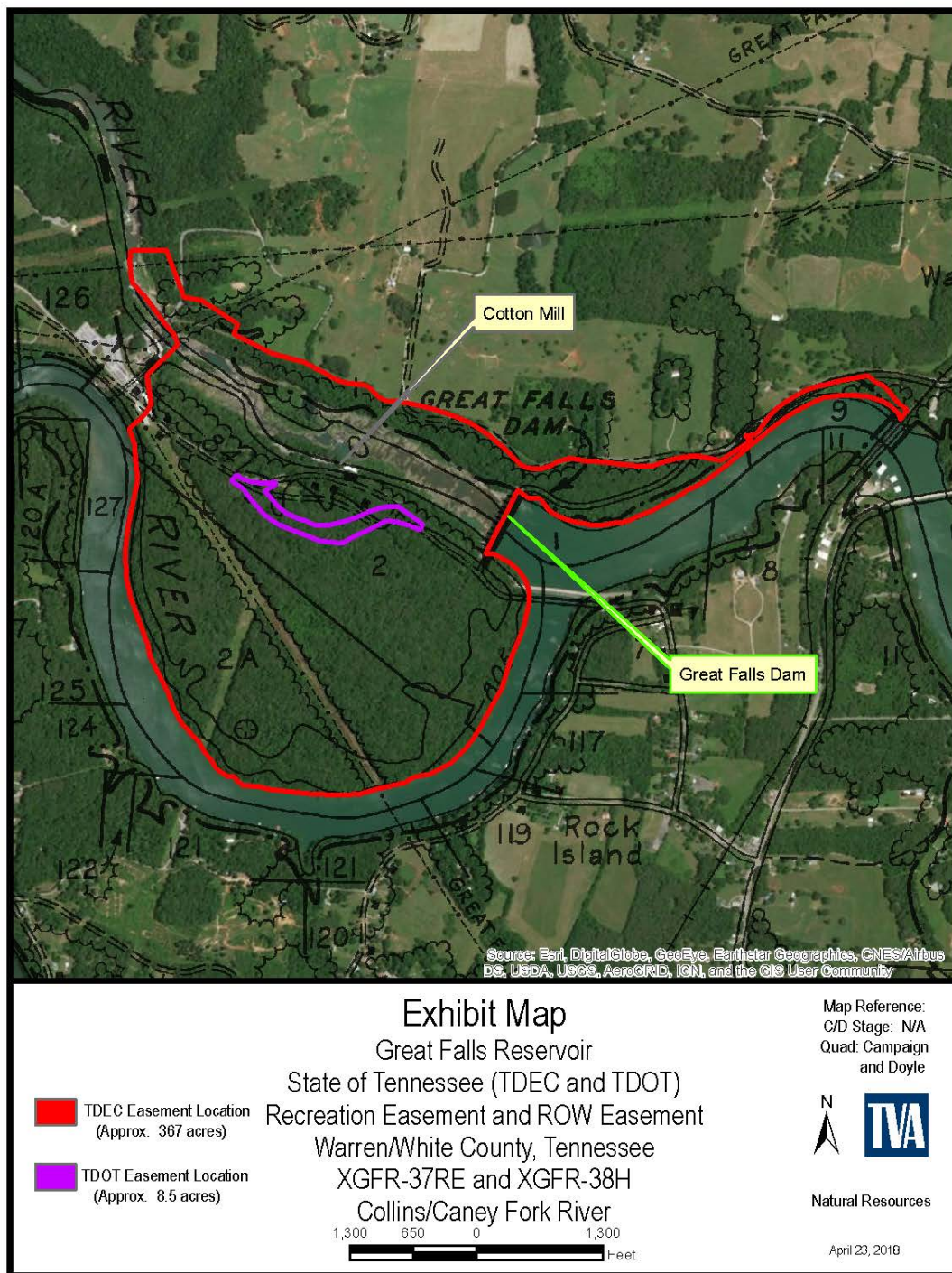


Figure 2. Great Falls Recreation Easement - Aerial Map

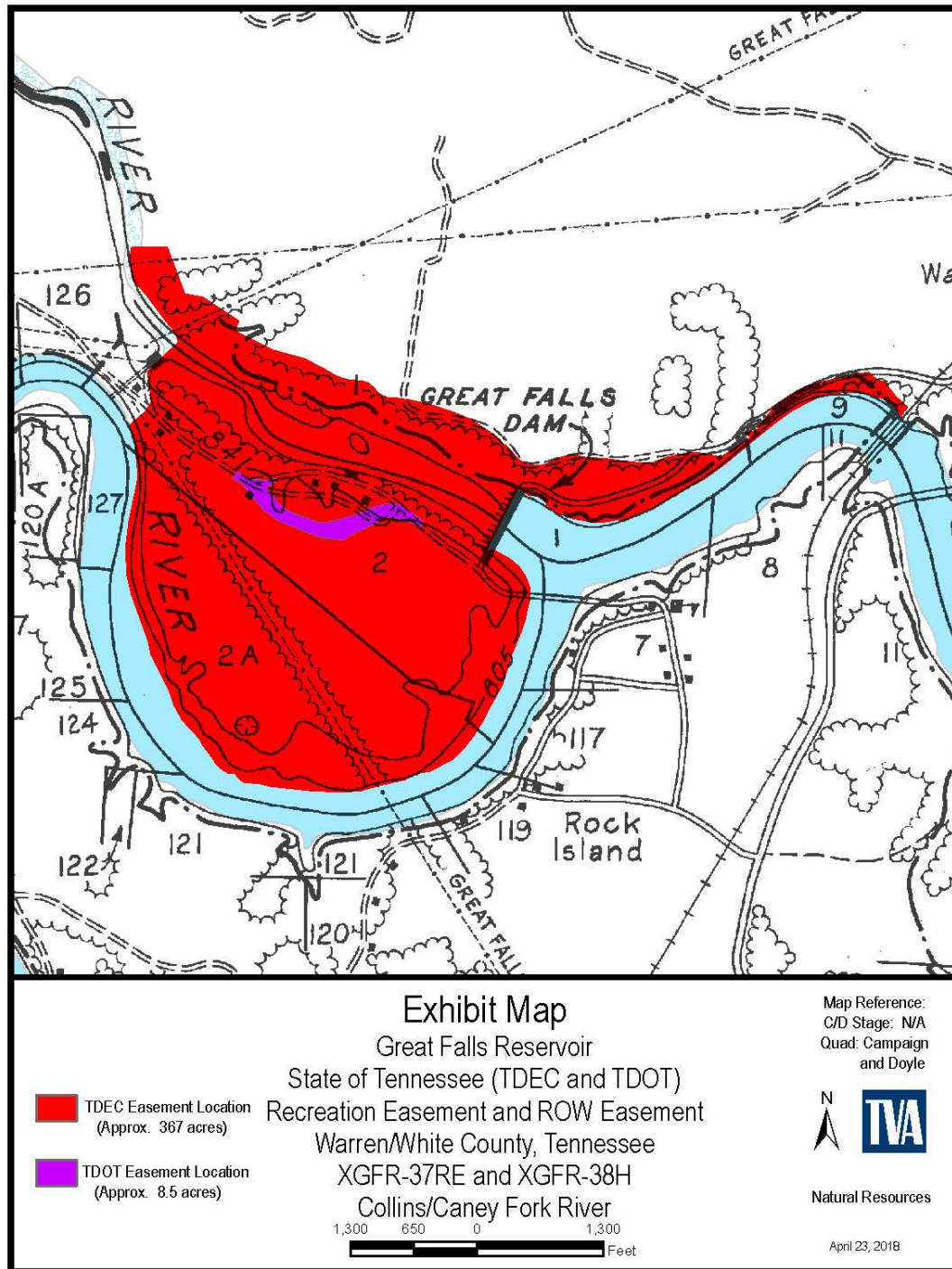


Figure 3. Great Falls Recreation Easement - Exhibit Map

Public Involvement

The proposed use of the historic mill and the potential for development of the State Park has generated interest, particularly within the local community. During the planning process for the Great Falls RLMP, great interest in TDEC's proposal was expressed and numerous requests for additional information were made. Numerous individuals expressed opposition to the proposal to renovate the historic mill and allow commercial use. Because of the public interest, TVA proposes to provide the public with an opportunity to review and provide comment on the draft EA during a 30-day public review period. TVA will coordinate with TDEC during the review process to determine whether a public meeting would also be helpful to communicate information regarding TDEC's proposal as well.

Identification of Relevant Environmental Issues

TVA conducted a preliminary internal review by a network of designated environmental specialists. Based on this internal review, TVA determined that the following resources could be potentially affected by the proposed action and are addressed in this EA.

- Archaeological and Historical Resources
- Threatened and Endangered Species
- Terrestrial Ecology
- Floodplains
- Recreation
- Noise
- Visual Impacts
- Transportation
- Socioeconomic Impacts

TVA also considered potential effects related to aquatic ecology, wetlands, solid and hazardous waste, prime farmland, air quality, and climate change. These resources were eliminated from additional analysis due to either their absence within the study area, or their impacts were determined to be de minimis. Standard construction Best Management Practices (BMPs) and erosion control methods according to TDEC guidelines should prevent direct, indirect, and cumulative impacts to aquatic and wetland resources and air quality. Therefore, there would be no direct, indirect, or cumulative effects on these resources.

Other Environmental Reviews

No other reviews were identified that are related to the action currently being reviewed.

Permits, Licenses, and Approvals

In addition to the necessary approvals from TVA, the following permits would be required for implementation of the proposed action:

- A Tennessee General National Pollution Discharge Elimination System (NPDES) Construction General Permit from the TDEC would be required as the relocation of SR-287 would disturb more than 1 acre of land. The development and approval of a Stormwater Pollution Prevention Plan (SWPPP) is a component of this permit. Construction Best Management Practices (BMPs) to minimize impacts to water quality would be outlined in the SWPPP.

CHAPTER 2 – DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Description of Alternatives

This EA evaluates two alternatives: Alternative A – the No Action Alternative, and Alternative B – Proposed Action Alternative. These alternatives are described in more detail below.

Alternative A - The No Action Alternative

Under the No Action Alternative, the area would continue to be managed by TDEC under an existing license agreement. The same or a similar level of public recreation opportunities would continue for all existing facilities within the licensed area, as stated within the existing license agreement. There would be no renovation or maintenance of the historic mill and associated development. The highway segment would remain in its current alignment.

Alternative B - Proposed Action Alternative

Under this alternative, TVA would enter into a 40-year agreement with TDEC to manage 367-acres of TVA-managed public lands in conjunction with TDEC's management of the Rock Island State Park. Under the agreement, TDEC would manage the TVA lands and be responsible for maintenance actions on existing facilities. TVA would permit TDEC to restore the historic Great Falls Cotton Mill for use as a commercial facility and access improvements at the mill site would be implemented (e.g., parking area, sidewalks). The agreement would allow for commercial recreation within five-acres surrounding the mill location. In addition, a segment of the state highway would be relocated to move the highway away from the historic mill location for better development of the property and to improve safety for drivers and for pedestrians visiting the area. The state highway proposal would affect approximately 15 acres of vegetated lands just south of the mill location and would require TVA to issue a separate permanent road easement to the State of Tennessee. This alternative is preferred by TVA.

Comparison of Alternatives

The environmental impacts anticipated under the No Action and the Action Alternative are compared and summarized below in Table 2-1.

Table 2-1. Summary and Comparison of Alternatives by Resource Area

Resource Area	Impacts from No Action Alternative	Impacts from Proposed Action Alternative
Archaeological and Historic Resources	No direct impacts. Potential indirect adverse impacts in the form of the continued deterioration of the mill.	Potential adverse impacts to the Historic Cotton Mill, two identified cemeteries, and identified archaeological sites. Adverse impacts would be mitigated through the execution of an Memoranda of Agreement (MOA).

Resource Area	Impacts from No Action Alternative	Impacts from Proposed Action Alternative
Threatened and Endangered Species	No impacts	No impacts would occur to aquatic species or habitats. Potential to impact foraging and roosting habitat for endangered bat species. Impacts would be mitigated through the implementation of TVA's programmatic agreement with the USFWS regarding listed bat species
Terrestrial Ecology	No impacts	Removal of vegetation would occur with the relocation of SR-287, however, these impacts would not be significant.
Floodplains	No impacts	No impacts
Recreation	No Impacts	Beneficial impacts in the form of increased recreational opportunities with the redevelopment of the cotton mill. Beneficial safety impacts to visitors by relocating SR-287 away from the mill. Insignificant adverse impacts to the Collins River Nature Trail from two new road crossings of SR-287.
Noise	No Impacts	Temporary impacts associated with the restoration of the mill and relocation of SR-287. Reduced noise impacts around the mill from the relocation of SR-287. Insignificant adverse impacts to the Collins River Nature trail from two new road crossings of SR-287.
Visual Resources	No Impacts	Temporary impacts associated with the restoration of the mill and relocation of SR-287. Reduced visual impacts around the mill from the relocation of SR-287. Insignificant adverse impacts to the Collins River Nature trail from two new road crossings of SR-287.
Transportation	No Impacts	Beneficial impacts in safety to drivers and to users of the redeveloped mill and recreation facilities by relocating the road away from those facilities. Insignificant adverse impacts to the Collins River Nature Trail from two new road crossings of SR-287.
Socioeconomic	No Impacts	Beneficial impacts with the

Resource Area	Impacts from No Action Alternative	Impacts from Proposed Action Alternative
		construction activities associated with the redevelopment of the mill and relocation of the roadway. Beneficial impacts from additional tourism associated with the operation of the restored mill.

Identification of Mitigation Measures

TVA would implement the routine environmental protection measures listed in this EA. In addition to those routine measures, the following non-routine measures would be implemented to reduce the potential for adverse environmental effects.

To minimize impacts to cultural resources, the following mitigation measures will be incorporated:

- An MOA will be executed with TVA, TDEC, and the Tennessee State Historic Preservation Officer (SHPO) to address adverse effects to 40WR125 and to develop a treatment plan for the mill.
- A 50 foot protective boundary (fence) will be placed around both cemeteries during the proposed undertaking. After construction is complete, a permanent fence will be erected to ensure that both cemeteries are avoided.
- Archeological features associated with 40WR125 could exist under SR 287 and adjacent gravel parking areas. Any proposed disturbance in these areas would be monitored by an archaeologist.

To minimize impacts to threatened and endangered species, the following mitigation measures will be incorporated:

- The proposed project activities fall under actions covered in TVA's Endangered Species Act Bat Programmatic Consultation (BPC) with the US Fish and Wildlife Service on federally listed bats. Under this BPC, proposed actions may affect but are not likely to adversely affect the gray bat. Actions also have the potential to adversely affect the Indiana bat and northern long-eared bat (NLEB). Conservation measures would be implemented to minimize impacts to these species. No project activities may occur until completion of steps outlined in the BPC has been verified by a TVA compliance biologist.

To minimize impacts to floodplains, the following mitigation measures will be incorporated:

- Any future facilities or equipment subject to flood damage on the Caney Fork River downstream from Great Falls Dam will be located above elevation 775.0.
- Any future facilities or equipment subject to flood damage on the Caney Fork or Collins River upstream of Great Falls Dam will be located above elevation 821.0.

- Any future development proposed within the limits of the 100-year floodplain will be consistent with the requirements of Executive Order 11988.
- TVA retains the right to permanently flood the easement area upstream of Great Falls Dam to elevation 805, and to temporarily and intermittently flood the entire tract, and that TVA will not be liable for damages resulting from flooding.
- No future facilities, including fill, will be constructed, installed, or maintained unless constructed in accordance with plans approved in advance, in writing, by TVA.

To minimize impacts to the recreating public, the following mitigation measures will be incorporated:

- TDOT would install signage and striping at both road crossings of the Collins River Trail, which would meet DOT and TVA design specifications.

Preferred Alternative

TVA's preferred alternative is Alternative B, the Proposed Action Alternative. Under this alternative, TVA would enter into a 40-year agreement with TDEC to manage 367-acres of TVA-managed public lands in conjunction with TDEC's management of the Rock Island State Park. TVA would permit TDEC to restore the historic Great Falls Cotton Mill for use as a commercial recreation facility and access improvements at the mill site would be implemented (e.g., parking area, sidewalks). Finally, TVA would authorize the relocation of a segment of the state highway away from the historic mill location for better development of the property and to improve safety for drivers and pedestrians. Additionally, Alternative B is the preferred alternative because it best suits the applicant's purpose and need and TVA's goal of providing recreational opportunities in the Tennessee Valley region.

CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Affected Environment and Anticipated Impacts

This chapter describes the affected environment (existing conditions of environmental resources in the project area) and the anticipated environmental consequences that would occur from the adoption of each of the alternatives described in Chapter 2.

The following resources have the potential to be affected by the proposed actions:

Archaeological and Historical Resources

Affected Environment - Federal agencies are required by the National Historic Preservation Act (NHPA) and NEPA to consider the possible effects of their undertakings on historic properties. The term “undertaking” means any project, activity, or program that is funded under the direct or indirect jurisdiction of a federal agency, or requires a federal license, permit, or federal approval.

An agency may fulfill its statutory obligations under NEPA by following the process outlined in the implementing regulations, Section 106 of NHPS, at 36 CFR Part 800. Under these regulations, considering an undertaking’s possible effects on historic properties is accomplished through a four-step review process: (1) initiation (defining the undertaking and the area of potential effects (APE), and identifying the consulting parties); (2) identification (studies to determine whether cultural resources are present in the APE and whether they qualify as historic properties); (3) assessment of adverse effects (determining whether the undertaking would damage the qualities that make the property eligible for the National Register of Historic Places (NRHP)); and (4) resolution of adverse effects (by avoidance, minimization, or mitigation). Throughout the process, the agency must consult with the appropriate State Historic Preservation Officer (SHPO) and federally recognized Indian tribes that have an interest in the undertaking, and should provide public notice of the undertaking.

Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, and locations of important historic events that lack material evidence of those events. Cultural resources that are included or considered eligible for inclusion in the NRHP and maintained by the Secretary of the Interior are called historic properties. To be included or considered eligible for inclusion in the NRHP, a cultural resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association. In addition, it must also meet one of four criteria: (a) association with important historical events; (b) association with the lives of significant historic persons; (c) having distinctive characteristics of a type, period, or method of construction, or representing the work of a master, or having high artistic value; or (d) having yielded or having the potential to yield information important in history or prehistory.

If the agency determines (in consultation) that the undertaking’s effect on a historic property within the APE would diminish any of the qualities that make the property eligible for the NRHP (based on the criteria for evaluation at 36 CFR 60.4), the effect is said to be adverse. An undertaking may have effects on a historic property that are not considered adverse, if those effects do not diminish the qualities of the property that identify it as eligible for listing

on the NRHP. Examples of adverse effects would be ground disturbing activities in an archaeological site, or erecting structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting. Federal agencies are required to resolve the adverse effects of their undertakings on historic properties. Resolution may consist of avoidance (such as choosing a project alternative that does not result in adverse effects), minimization (such as redesign to lessen the effects), or mitigation. Adverse effects on archaeological sites are typically mitigated by means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects on historic structures sometimes involves thorough documentation of the structure by compiling historic records, studies, and photographs. Agencies are required to consult with SHPOs, tribes, and others throughout the Section 106 process and to document adverse effects on historic properties resulting from agency undertakings.

The APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. TVA defined the APE for this undertaking to be the proposed approximately 28 acre corridor to be used for the road relocation and commercial development. TVA identified the APE for indirect visual effects as areas within a quarter mile radius of the proposed road corridor that would have a direct line of sight of the road. The remainder of the 367 acres was not surveyed as no ground disturbing impacts are proposed.

The proposed plans call for historic rehabilitation and adaptive reuse of the Great Falls Cotton Mill (Mill). TVA completed a rehabilitation feasibility study for the Great Falls Cotton Mill (Thomason 2016). TVA finds that in order to avoid adverse effects to the Mill, the proposed undertaking should be consistent with the *Secretary's Standards for the Treatment of Historic Properties* (NPS 2017). A Memorandum of Agreement (MOA) would be executed to detail the proposed treatment plan for the building.

TVA conducted a visual survey of the APE (Thomason 2017). Background research was conducted which demonstrated that three previously recorded architectural resources (Collins River Bridge, Great Falls Hydroelectric Station, and the Great Falls Cotton Mill) are located within the APE. The Collins River Bridge (WR-141) was constructed in 1924 and determined eligible for listing on the National Register of Historic Places (NRHP) in 2008. The Great Falls Hydroelectric Station (WR-140) was listed on the NRHP in 1990 within the *Pre-TVA Hydroelectric Development in Tennessee, 1901-1933* multiple property listing. The Great Falls Cotton Mill (WR-138) was listed on the NRHP in 1982 under Criterion A for commerce and Criterion B for important persons due to the enormous contributions of the Faulkner enterprise to Warren County History. The visual survey also evaluated and assessed effects on two early nineteenth-century cemeteries within the APE. One is named Cunningham Cemetery, with five internments, and the other is an unnamed cemetery (40WR117) that contains approximately 12 marked grave locations. A fence was constructed in an attempt to provide a boundary for the Cunningham Cemetery. However, based on the existing site form and visible depressions located outside the fence recently installed by the state park, it is likely the current fence does not encompass the entire cemetery.

TVA conducted an archaeological survey of the APE (Wampler 2016). Background research was conducted and one previously recorded archaeological resource (40WR117), the unnamed historic cemetery mentioned above, is located within the APE. 40WR117 was evaluated during the above mentioned visual survey. The graves associated with

40WR117 were utilized during the time of the Great Falls Cotton Mill's active operations, and is eligible for listing on the NRHP as a contributing element to the Great Falls Cotton Mill site. The archaeological survey identified one previously unrecorded multi-component archaeological site (40WR125). The prehistoric component consisted of approximately 100 lithic artifacts. The historic component of this site consisted of 18 structures visible on the surface as well as intact subsurface deposits. The above ground recorded features correspond with building locations depicted on the Tennessee Power Company's (TEPCO) Camp Map of Great Falls (circa 1912-1922), and with the Tennessee Electric Power Company's 1924 Great Falls Station Map of Camp Rock Island. In addition, 40WR125 represents the remains of Falls City, the mill town that housed mill workers, the mill manager, and structures associated with the operation of the textile enterprise. Site 40WR125 is eligible for listing on the NRHP as a contributing element of the Great Falls Cotton Mill and the Great Falls Hydroelectric Station.

Additional archaeological testing was conducted at 40WR125 (Andrews 2017) to evaluate the previously identified resources eligibility for inclusion on the NRHP. Thirteen structure/artifact concentration areas were identified during the 2016 investigation. Ten of these (Structure area 1, 2-4, 5, 6-9, 10-12, 13, 14-15, 16, AC 1 and 2) were revisited during the phase II testing. Structure 16 and AC 2 are unlikely to yield additional information and are considered non-contributing to the National Register of Historic Places (NRHP) eligibility of the site. Historic features associated with Structure 16 may be located under the pavement of SR 287. The remaining eight structure/artifact concentration areas all yielded intact surface and subsurface features in combination with high artifact densities. All eight have potential to yield further information concerning the late nineteenth century mill town and early twentieth century dam camps. In addition, intact deposits may exist under SR 287 fronting Structures 14-18 and adjacent gravel parking areas.

Environmental Consequences - Under Alternative A, TVA would not disturb any of the 28 acres within the 367-acre project footprint. Highway 287 would remain in its current location and the historic cotton mill building would not be renovated. TVA would not issue a 40 year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. There would be no changes in conditions from their current state.

Under Alternative B, TVA would grant TDEC a 40 year easement over 367 acres for the long term management of TVA lands. TVA would also issue a land use permit for the restoration of the historic mill, the relocation of SR-287, and to continue existing uses on the easement area.

TVA has determined the proposed undertaking would not adversely affect the Collins River Bridge, the Great Falls Hydroelectric Station or the Great Falls Cotton Mill.

TVA finds that in order to avoid adverse effects to the Mill, the proposed undertaking should be consistent with the *Secretary's Standards for the Treatment of Historic Properties* (NPS 2017) and that a Memorandum of Understanding (MOA) would be executed to detail the proposed treatment plan for the building rehabilitation.

A 50 foot buffer would be placed around the unnamed cemetery (40WR117) and the Cunningham Cemetery to ensure they are adequately avoided during the proposed undertaking. Fencing would be erected around both cemeteries including the 50 foot buffer and any depressions that could be potential graves identified during the survey.

TVA finds that 40WR125 is eligible for listing on the NRHP under Criterion D on its own merits in association with both the mill and dam occupants. Sites may be eligible for listing on the NRHP under Criteria D when the site has yielded, or may be likely to yield, important information in prehistory or history. In addition, 40WR125 is eligible as a contributing element to both the NRHP-listed Great Falls Cotton Mill (WR-138) and the NRHP-listed Great Falls Dam (WR-140).

TVA has consulted with the TN SHPO regarding these findings and determinations. On February 12, 2018, the TN SHPO concurred with TVA's findings that as proposed, the undertaking will adversely affect the National Register eligible site of 40WR125. A MOA is currently being developed to ensure that the mill rehabilitation is consistent with NPS standards mentioned above and to mitigate adverse effects to 40WR125.

Threatened and Endangered Species

Affected Environment - The Endangered Species Act (ESA) requires federal agencies to conserve endangered and threatened species and to determine the effects of proposed actions on endangered and threatened species and Designated Critical Habitat.

Endangered species are those determined to be in danger of extinction through all or a significant portion of their range. Threatened species are those determined to likely become endangered within the foreseeable future. Section 7 of the ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) when proposed actions may affect endangered or threatened species or Designated Critical Habitat.

Terrestrial Species

A search of the TVA Natural Heritage database in January 2016, and January 2018, resulted in records for three state-listed species (Allegheny woodrat, hellbender, and Tennessee cave salamander), and one federally listed species (gray bat) within three miles of the project footprint. Two additional federally listed species (Indiana bat and northern long-eared bat) are known from Warren County, Tennessee. During field review an additional state-listed species (Rafinesque big-eared bat) was observed in the project footprint (Table 3.1. Terrestrial Animal T&E Species).

Table 3.1 Federally listed terrestrial animal species reported from Warren County, Tennessee and other species of conservation concern documented within three miles of CEC #33772, Easement RLR 270788 Brock Hill Great Falls Reservoir¹

Common Name	Scientific Name	Federal Status	State Status ² (Rank ³)
Amphibians			
Hellbender	<i>Cryptobranchus alleganiensis</i>	PS	NMGT(S3)
Tennessee cave salamander	<i>Gyrinophilus pallescens</i>	--	THR(S2)
Mammals			
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	--	NMGT(S3)
Allegheny woodrat	<i>Neotoma magister</i>	--	NMGT(S3)
Gray bat	<i>Myotis grisescens</i>	LE	END(S2)

Common Name	Scientific Name	Federal Status	State Status ² (Rank ³)
Indiana bat ⁴	<i>Myotis sodalis</i>	LE	END(S1)
Northern long-eared bat ⁴	<i>Myotis septentrionalis</i>	LT	--(S1S2)

¹ Source: TVA Regional Natural Heritage Database, extracted 1/22/2016; USFWS Ecological Conservation Online System (<http://ecos.fws.gov/ecos/home.action>), accessed 1/22/2016.

² Status Codes: END or LE = Endangered; LT or THR = Listed Threatened; NMGT = In Need of Management; PS = Partial Status.

³ State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable.

⁴ Federally listed species with records in Warren County, Tennessee, but not within three miles of the project footprint.

Hellbenders favor fast-flowing, clear, rocky creeks and rivers with water temperatures that are ideally less than or equal to 20°C, where there are large shelter rocks, bedrock shelves, crevices, and logs. Eggs are laid in nests in late summer or fall beneath these large, flat shelter rocks or submerged logs (Natureserve 2016). The nearest known hellbender record occurs approximately 1.2 miles from the project footprint. Suitable habitat for hellbender exists adjacent to, but not within, the project footprint in the Collins and Caney Fork Rivers.

Tennessee cave salamanders are an aquatic amphibian that occurs in and around streams and pools within caves. Water tends to be clear and free of sediment, substrates include rock, gravel, sand, and mud (Natureserve 2018). The nearest known occurrence of this species is from a cave approximately 1.7 miles from the project footprint. Eleven caves are known within three miles of the project footprint, the nearest of which occurs approximately 0.5 miles from the project area. No additional caves were observed during field surveys in 2016 or 2018. Suitable habitat does not exist for this species within the project footprint.

Allegheny woodrat are associated with rock outcroppings, rocky cliffs, talus slopes with boulders and crevices. This species is also known to occupy cave habitat, especially when found in mixed coniferous-hardwood forests. It occasionally uses abandoned buildings but generally avoids humans. Allegheny woodrat generally occurs at higher elevations (to about 1,000 m) and is rarely found in lowlands or open areas (Lindzey 2008). The nearest known Allegheny woodrat record is approximately 1.2 miles from the project footprint. Two Allegheny woodrats were found nesting inside the historic cotton mill building during surveys on June 23, 2016.

Rafinesque's big-eared bats roost in caves or rock shelters during winter hibernation. In summer this species can be found roosting in hollow trees, abandoned buildings, under bridges, or in culverts near wooded areas. This species forages in mature bottomland hardwood forests, as well as in young pine stands, oak-hickory forests, open field edges, and riparian habitats such as swamps and stream edges. Poplar, beech, and maple stands are actively avoided when foraging (Titus 2015). As previously mentioned, eleven caves are known within three miles of the project footprint, the nearest of which occurs approximately 0.5 mile from the action area. The historic cotton mill building serves as a potential suitable roost site for this species. During the June 2016 surveys, one Rafinesque's big-eared bat was observed roosting in an interior closet-like room within the historic cotton mill building. This individual flushed during surveys of the building. The forested section of the proposed road relocation was also surveyed for potential summer roosting sites. Suitable summer roosting habitat for Rafinesque's big-eared bat exists

throughout forested areas of the project footprint. Foraging habitat for this species also occurs within and alongside the project footprint in forested areas, as well as over the Collins River and Caney Fork, adjacent to the project area.

Gray bats roost in caves year-round and migrate between summer and winter roosts during spring and fall (Brady et al. 1982, Tuttle 1976). Bats disperse over bodies of water at dusk where they forage for insects emerging from the surface of the water (Harvey 2011). The closest gray bat record is known from a cave approximately two miles from the project footprint. Eleven caves are known within three miles of the project footprint, the nearest of these occurs approximately 0.5 miles from the action area. No additional caves were observed during field reviews in 2016 or 2018, and no known caves are expected to be impacted by the proposed project activities. One additional potential summer roost site for this species occurs within the historic cotton mill building, which was surveyed for threatened and endangered species in June 2016. Gray bats were not found utilizing this site.

The northern long-eared bat predominantly overwinters in large hibernacula such as caves, abandoned mines, and cave-like structures. During the fall and spring they utilize entrances of caves and the surrounding forested areas for swarming and staging. In the summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees. Roost selection by northern long-eared bat is similar to that of Indiana bat, however northern long-eared bats are thought to be more opportunistic in roost site selection. This species also roosts in abandoned buildings and under bridges. Northern long-eared bats emerge at dusk to forage below the canopy of mature forests on hillsides and roads, and occasionally over forest clearings and along riparian areas (USFWS 2014). The nearest Northern long-eared bat is known from a mist net capture record approximately 4.1 miles from the project footprint. As mentioned above, 11 caves have been documented within three miles of the project. None of these caves are expected to be impacted by the proposed project activities. One additional potential summer roost site for this species occurs within the historic cotton mill building, which was surveyed for threatened and endangered species in June 2016. Northern long-eared bats were not found utilizing this site.

Indiana bats hibernate in caves in winter and use areas around them in fall and spring (for swarming and staging), prior to migration back to summer habitat. During the summer, Indiana bats roost under the exfoliating bark of dead and living trees in mature forests with an open understory, often near sources of water. Indiana bats are known to change roost trees frequently throughout the season, yet still maintain site fidelity, returning to the same summer roosting areas in subsequent years. This species forages over forest canopies, along forest edges and tree lines, and occasionally over bodies of water (Pruitt and TeWinkel 2007, Kurta et al. 2002, USFWS 2015). The nearest known Indiana bat is from a historical record in a cave in White County, Tennessee, approximately 5.9 miles from the action area. As mentioned above, 11 caves have been documented within three miles of the project area. None of these caves is expected to be impacted by the proposed project activities. No additional caves were observed during field surveys in 2016 or 2018. One additional potential summer roost site for this species occurs within the historic cotton mill building, which was surveyed for threatened and endangered species in June 2016. Indiana bats were not found utilizing this site.

Foraging habitat for Gray bats, northern long-eared bats, and Indiana bats exists throughout the project footprint over forest fragments, a seasonally flooded, sparsely forest

area, and the Collings and Caney Fork Rivers. Suitable summer roosting habitat for northern long-eared bats and Indiana bat exists throughout forested areas of the project footprint.

Assessment of the project area for presence of Indiana bat and northern long-eared bat summer roosting habitat followed federal guidance and resulted in the identification of approximately 22 suitable roost trees scattered throughout the 13 acre highway relocation footprint, as well as suitable summer and migratory habitat within the historic cotton mill building (USFWS 2014, 2015). Habitat quality ranged from moderate to high based on the presence of trees with exfoliating bark (i.e., 2 white oaks and 20 snag trees), open forest understory, and proximity to water. Suitable summer roosting areas were comprised of deciduous mature hardwood stands dominated by a mixture of American beech, eastern red cedar, southern red oak, and white oak.

Aquatic Species

A query of the TVA Natural Heritage Database on 1/18/2016 for records of listed aquatic animal species indicated two federally listed (one fish, one mussel) and 11 additional state-listed species (one crustacean, nine fishes, and one snail) within the Caney Fork River and Collins River watersheds of the proposed project area. (Table 3.2)

Table 3.2. Records of federal and state-listed aquatic animal species within the Caney Fork River (0513010806) and Collins River (HUC 0513010704) 10-digit HUC watershed of the proposed project ¹

Common Name	Scientific Name	Federal Status	State Status ² (Rank ³)
Crustaceans			
Swamp River Cave Amphipod	<i>Stygobromus sp.22</i>	-	TRKD(S3)
Fishes			
Barrens Darter	<i>Etheostoma forbesi</i>	-	END(S1)
Barrens Topminnow	<i>Fundulus julisia</i>	-	END(S1)
Bedrock Shiner	<i>Notropis rupestris</i>	-	NMGT(S2)
Bluemask Darter	<i>Etheostoma akatulo</i>	LE	END(S1)
Cherry Darter	<i>Etheostoma etnieri</i>	-	NMGT(S3)
Flame Chub	<i>Hemitremia flammea</i>	-	NMGT(S4)
Sooty Darter	<i>Etheostoma olivaceum</i>	-	NMGT(S3)
Southern Cavefish	<i>Typhlichthys subterraneus</i>	-	NMGT(S3)
Snails			
Cumberland Pigtoe	<i>Pleurobema gibberum</i>	LE	END(S1)
Ornate Rocksnail	<i>Lithasia geniculata</i>	-	TRKD(S2)

- ¹ Source: TVA Regional Natural Heritage Database, extracted 1/18/2016; USFWS Ecological
² Status Codes: END or LE = Endangered; LT or THR = Listed Threatened; NMGT = In Need of Management; PS = Partial Status.
³ State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable.
⁴ Federally listed species with records in Warren County, Tennessee, but not within three miles of the project footprint.

The federally endangered bluemask darter is endemic to the Caney Fork River drainage. The bluemask darter is typically found just downstream of riffles or runs over clean sand and fine gravel substrates at depths of 10-50 cm (Layman and Mayden 2009). It is most abundant and widely distributed in the Collins River, a tributary to the Caney Fork, which enters just above Great Falls Dam. Spawning activities of the bluemask darter take place in May and June in gravelly runs (Simmons and Layzer 2004).

The federally endangered Cumberland pigtoe is also endemic to the Caney Fork River drainage. This species inhabits small to medium-sized rivers in riffle areas. It is typically found over clean sand and gravel substrates at depths ranging from 10 cm to 1 m (Gordon and Layzer 1989, Ahlstedt et al. 2004). However, this species is not known to occur below Great Falls.

Environmental Consequences - Under Alternative A, TVA would not disturb any of the 18 acres within the 367-acre project footprint. Highway 287 would remain in its current location, the historic cotton mill building would not be renovated, and all vegetation within five acres of the historic cotton mill building would remain in its current state. No clearing of vegetation would occur within the project footprint. Trees and other vegetation would remain in place in their current state. No direct, indirect, or cumulative impacts to terrestrial or aquatic threatened and endangered species would occur as a result of proposed actions.

Under Alternative B, TVA would renovate the historic cotton mill building and relocate a segment of SR 287. Within the proposed footprint, TVA would clear vegetation on some or all of the 18 acres surveyed. Both forested and herbaceous vegetation would be removed in association with the proposed actions. There would be no impacts to aquatic habitats due to the removal of vegetation

Terrestrial Species

Four state-listed terrestrial animal species were assessed based on documented presence within three miles of the project footprint. Additionally, one federally threatened and two federally endangered species have been assessed based on known or potential presence within Warren County, Tennessee. Of these, five species have the potential to utilize the project area. Habitat for hellbender and Tennessee cave salamander does not exist within the project footprint. Neither hellbender nor Tennessee cave salamander would be impacted by the proposed actions.

Suitable habitat exists for Allegheny woodrat within the historic cotton mill building. Additional potentially suitable habitat for this species occurs within the eleven recorded caves and the rocky cliffs immediately adjacent to the project area along the Caney Fork River. As previously mentioned above, the nearest cave occurs 0.5 mile from the action area. Neither this, nor any other cave, is expected to be impacted by the proposed actions. Proposed actions associated with the recreation easement request by TDEC include restoration of the historic cotton mill building for commercial development. Two Allegheny woodrats were identified using this building during surveys in June 2016. Individual woodrats using the cotton mill building may be impacted by the proposed renovations if

these activities occur during breeding season, between March and September, when young are being born and unable to leave the nest. Juvenile and adult individuals would be able to disperse upon the onset of disturbance, thus likely avoiding direct impacts. In order to avoid direct impacts to young Allegheny woodrats, it is TVA's recommendation that renovation activities of the cotton mill building take place outside of breeding season. Provided proposed actions occur outside of breeding season, Allegheny woodrat would not be directly impacted by the project activities. Should actions occur during Allegheny woodrat breeding season, proposed actions may directly affect some individuals but are not likely to impact populations of this species.

The historic cotton mill building may provide potential summer roosting and transitional (migratory) habitat for gray bat, Indiana bat, northern long-eared bat and Rafinesque's big-eared bat. However, of these four species, only Rafinesque's big-eared bat was found utilizing this building during surveys for threatened and endangered species in June 2016. One dead big brown bat was also found during surveys of this building. The historic cotton mill may serve as a temporary roost site for bats of several species during periods of migration and foraging. Based on field survey findings in June 2016, it is the recommendation of TVA that building renovation activities take place during the winter clearing window (October 15 through March 31) in order to avoid impacts to roosting or transitional (migrating) bats. Once the mill has been sealed up and transitional bats could not enter, then renovation activities could occur without any species specific restrictions. The forest within the proposed road relocation was also surveyed for potential summer roosting sites. Twenty-two trees (20 snag trees and two white oaks) suitable for use by summer roosting bats were identified within the 13-acre proposed highway relocation site. Habitat suitability was determined by the number of trees with exfoliating bark (snags and live trees) and their proximity to water sources. A proposed 13 acres of suitable summer roosting habitat for Indiana bat and northern long-eared bat would be removed in association with the proposed actions. Foraging habitat for these bat species also occurs within and alongside the project footprint in forested areas, as well as within seasonally flooded areas, and over the Collins and Caney Fork Rivers adjacent to project area.

Best Management Practices (BMP) would be used around water bodies and seasonally flooded areas within the action area during renovation and relocation activities to minimize impacts to water bodies. With BMPs in place, foraging habitat would not be impacted for any of these bat species. As well, an abundance of similarly suitable forested foraging habitat occurs across the landscape surrounding the project footprint such that the removal of the trees within the project area would not affect foraging bats.

The proposed project activities fall under actions covered in TVA's Endangered Species Act Bat Programmatic Consultation (BPS) with the US Fish and Wildlife Service on federally listed bats. Under this BPS, proposed actions may affect but are not likely to adversely affect gray bat. Actions also have the potential to adversely affect Indiana bat and NLEB. Conservation measures would be implemented to minimize impacts to these species. No project activities may occur until completion of steps outlined in the BPS has been verified by a TVA compliance biologist.

Aquatic Species

As the entire project is land based, there would be no direct impacts to sensitive aquatic species. Indirect impacts to sensitive aquatic species associated from erosion and sedimentation would be avoided by minimizing ground disturbance and conducting all work in accordance with best management practices as described in the project's Stormwater

Pollution Prevention Plan (SWPPP). Therefore, with proper implementation of best management practices, no impacts to endangered, threatened, or special status species are anticipated to occur.

Terrestrial Ecology

Affected Environment - Habitat assessments for terrestrial animal species were conducted in the field on January 25 and June 23, 2016, and on February 13, 2018. The total project footprint is approximately 367 acres. The total footprint reviewed was approximately 18 acres in size because this EA focuses on potential impacts that may occur at the site of the historic mill and adjacent lands (up to 5 acres) and where the segment of the relocated state highway would be constructed (approximately 13 acres) as TDEC is only proposing changes in its management of these areas. Since 1971, the project footprint has been managed by TDEC in conjunction with its management of the adjacent Rock Island State park. The land is located on Great Falls Reservoir in Warren County, Tennessee, along the Collins and Caney Fork Rivers. Habitat types within and surrounding the project area consist of fragmented and contiguous forest habitat, early successional habitat, which appeared to be subject to flooding during parts of the year, and some developed acreage. Thirteen acres of forested habitat within the proposed project footprint have the potential to be cleared and maintained as rerouted SR 287.

Deciduous and mixed deciduous-evergreen forests occupy the majority of the acreage within the project footprint. These forest types provide habitat for an array of common terrestrial animal species. Birds typical of this habitat include Acadian flycatcher, chuck-will's-widow, downy and hairy woodpecker, eastern screech-owl, eastern wood-pewee, great horned-owl, indigo bunting, red-headed woodpecker, red-tailed hawk, summer tanager, wood thrush, wild turkey, and yellow-billed cuckoo (National Geographic, 2002). This area also provides foraging and roosting habitat for several species of bat, particularly in areas where the forest understory is partially open. Bat species likely found within this habitat include eastern red bat, evening bat, and tricolored bat. Eastern chipmunk, gray fox, and woodland vole are other mammals likely to occur within this habitat (Whitaker 1996). Eastern black kingsnake, black ratsnake, eastern box turtle, and ring-necked snake are common reptiles of deciduous forests in this region (Dorcas and Gibbons 2005).

Early successional, herbaceous habitat (i.e., field) comprises only a small portion of the project footprint. Common inhabitants of early successional habitat include brown-headed cowbird, brown thrasher, common yellowthroat, eastern bluebird, eastern kingbird, eastern meadowlark, field sparrow, and grasshopper sparrow (National Geographic 2002). Bobcat, coyote, eastern cottontail, eastern mole, and red fox are mammals typical of fields and cultivated land (Whitaker 1996). Reptiles, including northern copperhead and northern black racer are also known to occur in this habitat type (Dorcas and Gibbons 2005).

Developed areas, and areas otherwise previously disturbed by human activity are home to a large number of common species. American robin, Carolina chickadee, blue jay, European starling, house sparrow, mourning dove, northern cardinal, northern mockingbird, black vulture, and turkey vulture are birds commonly found along road edges, industrial properties, and residential neighborhoods (National Geographic 2002). Mammals found in this community type commonly include eastern gray squirrel, northern raccoon, and Virginia opossum (Whitaker 1996). Road-side ditches provide potential habitat for amphibians including American toad, upland chorus frog, and spring peeper. Reptiles potentially present include eastern black kingsnake, eastern garter snake, and midland brown snake (Dorcas and Gibbons 2005).

Review of the TVA Regional Natural Heritage database in November 2016 and January 2018 indicated 11 caves documented within three miles of the project area. No caves were identified during field reviews of the project footprint in 2016 or 2018. The historic cotton mill building, a three story derelict structure located adjacent to the Caney Fork River, likely provides potentially suitable habitat for multiple terrestrial animal species. No aggregations of migratory birds or wading bird colonies have been documented within three miles of the project area and none were observed during field surveys. Proposed actions are within Rock Island State Park, a natural area between the confluence of the Collins and Caney Fork Rivers, which likely provides an abundance of suitable habitat for migratory birds.

Environmental Consequences - Under Alternative A, TVA would not disturb the 18 acres within the 367-acre project footprint. Highway 287 would remain in its current location, the historic cotton mill building would not be renovated, and all vegetation within five acres of the historic cotton mill building would remain in its current state. No clearing of vegetation would occur within the project footprint. Trees and other vegetation would remain in place in their current state. No direct, indirect, or cumulative impacts to wildlife would occur as a result of proposed actions.

Under Action Alternative B, TVA would renovate the historic cotton mill building and relocate a segment of SR 287. On the proposed footprint, TVA would clear vegetation on some or all of the 18 acres surveyed. Both forested and herbaceous vegetation that may provide habitat for common wildlife species would be removed in association with the proposed actions.

Vegetation removal would occur on some or all of the early successional, herbaceous habitat (pastures and cultivated fields). Impacts to wildlife habitat would be limited to the early successional pockets within the 18-acre footprint. Any wildlife (primarily common, habituated species) currently using these previously disturbed areas may be displaced by increased levels of disturbance during construction actions, but it is expected that they would return to the project area upon completion of actions.

Clearing of some portion of the 13 acres of forested habitat would take place as part of the proposed actions. These areas of forest would be removed and permanently maintained as a state highway. Direct effects to some individuals that are immobile during the time of construction may occur, particularly if construction activities transpire during breeding/nesting seasons. However, the actions are not likely to affect populations of species common to the area, as similarly forested habitat exists in the surrounding landscape.

In its current state the historic cotton mill building likely provides habitat for several species, primarily during summer and migratory periods. This building would be subject to renovation related disturbances. Animals currently occupying this derelict structure are expected to be displaced by renovation related disturbance. Such disturbances and habitat removal would disperse wildlife from the project footprint into surrounding areas as they attempt to find new food and shelter sources and to reestablish territories, potentially resulting in added stress or energy use to these individuals. Much of the forested acreage within the project area has been previously disturbed. However, these previously disturbed areas provide corridors for animal dispersal. The adjacent areas would be relatively pervious to terrestrial animal species dispersing from the action area. In the event that surrounding areas are already overpopulated, further stress to wildlife populations presently utilizing these areas may result, as well as to those attempting to relocate. The landscape

surrounding the project footprint is relatively forested, thus, it is unlikely that species currently occupying adjacent habitat would be negatively impacted by the influx of new residents. It is expected that over time, those species that occur in early successional habitats would return to the project area upon completion of project actions.

Cumulative effects of the project on common wildlife species are expected to be negligible. Proposed actions across the project footprint would permanently remove existing forested habitat for common wildlife. Following completion of the project, the action area would be maintained as highway 287 and the historic cotton mill building and surrounding acreage would be permanently used for commercial recreational purposes.

Floodplains

Affected Environment – A floodplain is the relatively level land area along a stream or river that is subject to periodic flooding. The area subject to a one-percent chance of flooding in any given year is normally called the 100-year floodplain. The area subject to a 0.2 percent chance of flooding in any given year is normally called the 500-year floodplain. Although the reservoir elevation is lowered during the winter months, there is no flood control storage within Great Falls Reservoir. Great Falls is a single-purpose power project and the Power Storage Zone is the volume of space available to store water for use in power generation.

Downstream of Great Falls Dam

No formal flood study has been done of the Caney Fork River downstream of Great Falls Dam. However, TVA does have streamflow and elevation data at the Great Falls powerhouse, at Caney Fork River (CFR) Mile 90.4. Based upon the data available at Great Falls powerhouse, and the contour map supplied by the applicant, the 100-year flood elevation of CFR from Great Falls Powerhouse at CFR Mile 90.4 to Great Falls Dam at CFR Mile 91.1 would vary from about elevation 680.0 at the powerhouse to about elevation 750.0 at the dam. The 500-year flood elevation of CFR from Great Falls Powerhouse at CFR Mile 90.4 to Great Falls Dam at CFR Mile 91.1 would vary from about elevation 686.0 at the powerhouse to about elevation 756.0 at the dam. All elevations are reference to National Geodetic Vertical Datum (NGVD 1929).

The 100- and 500-year flood elevations at the proposed conference center site at CFR Mile 90.8 are estimated to be about 745.0 and 751.0 feet, respectively. The 1971 contract restricted development below the 775.0 contour downstream from Great Falls Dam. TVA therefore concludes that a first floor elevation of the lowest floor of the renovations no lower than 775.0 feet would provide an adequate level of flood protection against the estimated 100- and 500-year floods. Flood Risk also concludes that prohibiting flood-damageable development below elevation 775.0 would provide an adequate level of flood protection against the estimated 100- and 500-year floods.

Upstream of Great Falls Dam

The 100-year flood elevation of the CFR varies from 815.5 feet on the upstream side of Great Falls Dam at CFR Mile 91.1, to 815.7 feet at CFR Mile 91.9. The 500-year flood elevation of the CFR varies from 820.0 feet on the upstream side of Great Falls Dam at CFR Mile 91.1, to 820.3 feet at CFR Mile 91.9. No formal flood study has been done of the Collins River in Great Falls Reservoir. However, the Collins River may be assumed to behave similarly to the CFR during floods. Therefore, flood elevations on the Collins River were estimated from Caney Fork River flood elevations within Great Falls Reservoir. TVA estimates that the 100-year flood elevation of the Collins River would vary from 815.5 feet on the upstream side of Great Falls Dam at Collins River Mile 0.0, to 816.0 feet at Collins

River Mile 1.7. The 500-year flood elevation of the Collins River would vary from 820.0 feet on the upstream side of Great Falls Dam at Collins River Mile 0.0, to 821.0 feet at Collins River Mile 1.7.

Environmental Consequences - As a federal agency, TVA must evaluate development a proposal occurring within the 100-year floodplain to ensure that the project is consistent with the requirements of EO 11988 (Floodplain Management). The objective of EO 11988 is “ to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.” The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances. The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative.

In 1981, TVA completed a class review of a certain repetitive actions that could occur in floodplains. The purpose of the class review was to (1) determine, for the actions listed, if there are practicable alternatives to siting in the floodplain; and (2) if no practicable alternatives exist, establish review criteria that, if followed, will minimize any adverse impacts that may be associated with the individual actions reviewed. A number of actions which could occur in floodplains were reviewed. As a result of the class review, TVA determined that there were no practicable alternative to the actions that would avoid sitting in the floodplain. This review was published in the Federal Register at 46 CFR §22845-46.

Under Alternative A, TVA would not issue a 40 year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. TDEC would not restore and repurpose the historic cotton mill and TDOT would not relocate SR 287. Therefore, there would be no changes to the conditions within the local floodplains.

Under Alternative B, TVA would grant TDEC a 40-year easement over 367 acres, for the long term management of TVA lands. TVA would also issue a land use permit for the restoration of the historic mill and the relocation of SR 287.

The existing picnic tables, picnic pavilion, restrooms, parking areas, visitors center, SR 287, the proposed re-routing of SR 287, Twin Falls and visitor center overlooks, and a portion of the Collins River Nature Trail are or would be located downstream of Great Falls Dam. The existing facilities are, and the proposed facilities would be located above elevation 775.0, which is well above estimated 100-year flood elevations, which would be consistent with EO 11988.

Portions of the existing Nature Trail may be located within the 100-year floodplain of the Collins River in Great Falls Reservoir. Consistent with EO 11988, walking trails are considered to be repetitive actions within the 100-year floodplain that should result in minor impacts (TVA 1981).

The proposed easement would comply with the Flood Control Storage Loss Guideline because there is no flood control storage on Great Falls Reservoir. There would be no loss of power storage.

Flood Risk has no objection to the proposed 40-year public and commercial recreation easement, provided the following conditions are included in any transfer document(s):

Easement Conditions:

- Any future facilities or equipment subject to flood damage on the Caney Fork River downstream from Great Falls Dam will be located above elevation 775.0.
- Any future facilities or equipment subject to flood damage on the Caney Fork or Collins River upstream of Great Falls Dam will be located above elevation 821.0.
- Any future development proposed within the limits of the 100-year floodplain will be consistent with the requirements of Executive Order 11988.
- TVA retains the right to permanently flood the easement area upstream of Great Falls Dam to elevation 805, and to temporarily and intermittently flood the entire tract, and that TVA will not be liable for damages resulting from flooding.
- No future facilities, including fill, will be constructed, installed, or maintained unless constructed in accordance with plans approved in advance, in writing, by TVA.

Other facilities may be constructed in the future, and those facilities and projects would be evaluated at that time for compliance with floodplain requirements. The 1971 contract restricted development below the 821.0 contour upstream from Great Falls Dam. TVA therefore concludes that prohibiting flood-damageable development below elevation 821.0 would provide an adequate level of flood protection against the estimated 100- and 500-year floods.

By incorporating the above conditions in the 40-year easement to minimize adverse impacts, the proposed project would have no significant impact on floodplains and their natural and beneficial values.

Recreation

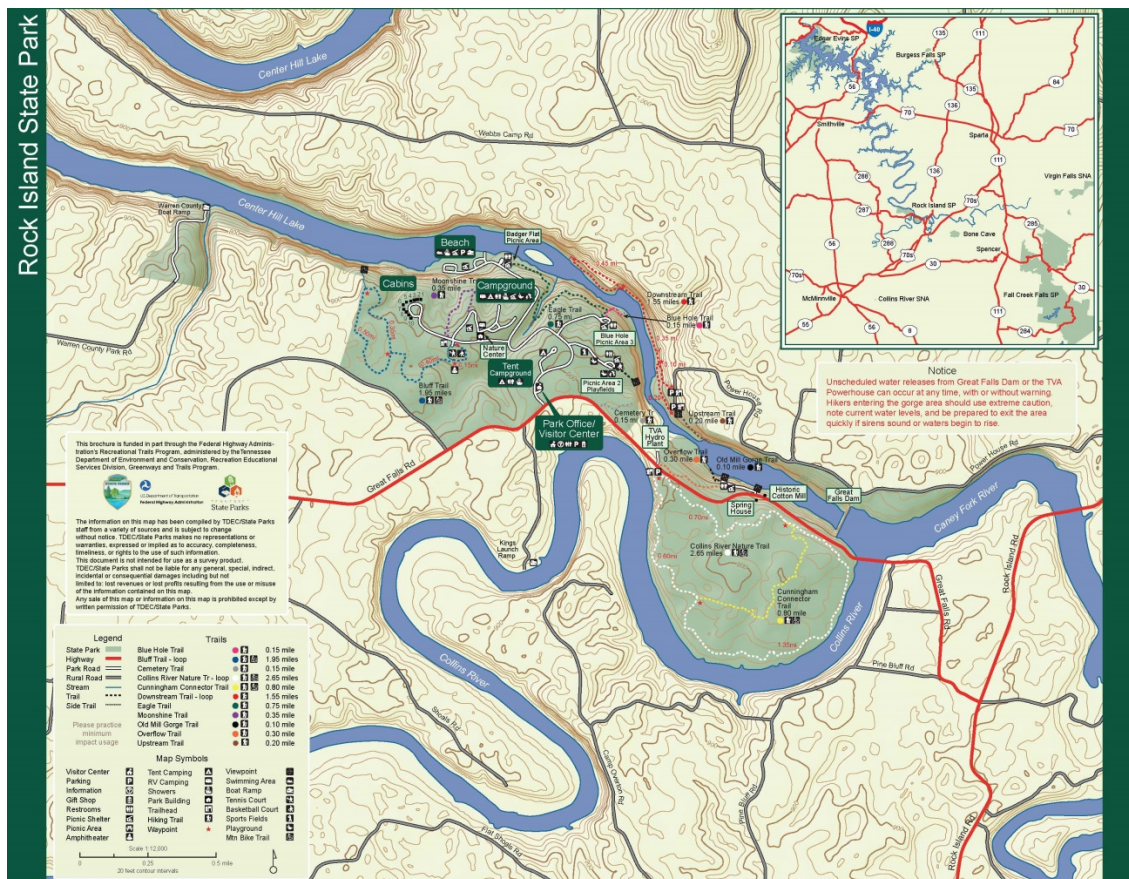
Affected Environment – Great Falls Reservoir is an outdoor recreation resource that attracts visitors from within and outside the region. Rock Island State Park has been developed on Great Falls Reservoir which includes the rugged beauty of the Caney Fork Gorge. The state park is managed by the State of Tennessee. The state park has an observation area, picnic facilities, restrooms, and trails system. The Caney Fork River Gorge contains scenic overlooks, waterfalls, deep pools, and limestone paths perfect for hiking, swimming, fishing, kayaking, and exploring (TVA 2017).

A review of Rock Island State Park indicates numerous recreational opportunities within the survey area. A 19th Century Cotton Mill, Spring House, and associated structures are located on the northern portion of the area, immediately adjacent to SR-287. A paved parking lot with restrooms and picnic tables is provided in this area. This area around the cotton mill provides numerous vantage points of the 30 foot tall horseshoe waterfall and the Caney Fork River. The parking area at the mill and picnic area is popular on weekends and holidays, and is often at capacity. Additionally, visitors to the area must cross SR-287 to view the Spring House and interpretive signage.

Multiple trails are located within the proposed project area. The Collins River Natural Trail is a 2.65 mile long hiking and mountain biking trail which creates a loop on the land paralleled by the Collins River. The 0.80 mile Cunningham Connector Trail has also been developed within the immediate area. Both the Collins River Natural Trail and Cunningham

Rock Island State Park Recreation Easement

Connector Trail are approximately 3 feet wide and traverse through the heavily wooded deciduous and pine forest on the peninsula formed by the confluence of the Collins and Caney Fork Rivers. The natural setting of these trails is disrupted by the high tension power lines which hang overhead the trails. The trails are accessed by a formal trailhead off SR-287, across from the TVA powerhouse. The trailhead parking lot is a small gravel lot which can hold approximately 10 vehicles. Two additional trails, the 0.10 Old Mill Gorge Trail and the 0.30 mile Overflow Trail are accessed from the Cotton Mill parking lot. The Old Mill Gorge Trail is a strenuous trail which accesses different vantage points of the Caney Fork River. The Overflow Trail climbs to the Collins River Nature Trailhead and provides additional parking for this access point.



2017 Rock Island State Park Map

Environmental Consequences - Under Alternative A, TVA would not issue a 40 year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. TDEC would not restore and repurpose the historic cotton mill and TDOT would not relocate SR-287. Recreational opportunities would not change.

Under Alternative B, TVA would grant TDEC a 40 year easement over 367 acres, for the long term management of TVA lands. The easement would provide the State Park certainty in its management of TVA lands, as well as allow the state to secure financing for future improvements.

TVA would allow for the restoration and use of the historic mill for commercial recreation purposes within the five-acre area, and would allow the associated site access improvements. While there will be short term adverse impacts to recreational opportunities during construction, these impacts would be minor and of short duration. The restoration and reuse of the historic mill would increase passive recreational opportunities in the area. And the site access improvements of increasing parking will be beneficial in improving access to already developed recreation facilities such as the existing trails, overlooks, and picnic areas.

TVA would also permit the relocation of SR 287. By relocating the roadway, through traffic would be removed from the cotton mill, spring castle and associated developed recreation facilities. The effects of removing the traffic volume would have a beneficial impact on visitor safety and overall visitor experience.

The relocation of SR 287 would impact the Collins River Natural Trail by bisecting the trail in two locations. Due to the relatively low daily traffic volume, the 25 mph speed posting, and the diminished character of the trail from overhead powerlines, impacts to the trail from by the two road crossings would be insignificant. TDOT would install signage and striping at the road crossings which would meet TDOT and TVA design specifications. Additionally, there would be short term construction impacts to trail users as the road is being built, but these impacts would be temporary and of short duration.

Noise

Affected Environment – Noise is generally defined as unwanted sound that disrupts normal activities or that diminishes the quality of the environment. It is usually caused by human activity that adds to the natural acoustic setting of a locale. The perceived loudness or intensity between a noise source and receptor may change as a result of distance, topography, vegetation, water bodies, and structures. Topography, vegetation, and structures can change noise intensity through reflection, absorption, or deflection. Reflection tends to increase the intensity, while absorption and deflection tend to decrease the intensity. Sources of noise along TVA reservoirs include industrial development, power generation facilities, substations, developed recreation sites, recreational watercraft use, navigation use, and automobile traffic.

The project area is currently allocated for commercial recreation in the Great Falls Reservoir Lands Plan (TVA 2017). Recreational facilities that support low-intensity uses, such as parks or open spaces, generate less noise than more intensive uses such as marinas and developed recreation areas.

The primary source of noise from the project location is from the waterfalls in the Caney Fork River, visitors to the property, and vehicle traffic on SR 287. Noise from developed recreational use areas could be compared to residential areas with a range between 50 dBA (quiet suburb, not close to major roads) to about 65 dBA (relatively noisy residential area).

Due to the vicinity of the falls to the project locations, motor boats are not able to access this section of the Caney Fork River. Power boats are located on the Collins River, south of the project area. However, the closest power boats could come to the project area would be approximately half a mile away.

Environmental Consequences – Under Alternative A, TVA would not issue a 40 year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. TDEC would not restore and repurpose the historic cotton mill and TDOT would not relocate SR 287. There would be no change in noise impacts from current conditions.

Under Alternative B, TVA would grant TDEC a 40 year easement over 367 acres, for the long term management of TVA lands. The easement would provide the State Park certainty in its management of TVA lands, as well as allow the state to secure financing for future improvements. Noise impacts can be expected during the construction of the facility and the construction of the relocated roadway. Construction noise impacts are anticipated to be temporary and of short duration.

Redeveloping and repurposing the mill would result in minor increases in noise due to the increased visitor usage. These noise levels are anticipated to be within the decibel range associated with activities that would occur on lands zoned for public recreation.

The relocated roadway would result in increased noise impacts to users of the Collins River Nature Trail. These impacts would be isolated to the two locations where the road is proposed to cross the trail. As the proposed relocation of the road does not increase the volume of traffic on the road and the posted speed limit will not be raised, the noise impacts associated with the two new trail crossings would be similar to those at the other recreation areas adjacent to existing SR 287.

While there may be minor adverse noise impacts to the Collins River Nature Trail, relocating the roadway away from mill should result in reduced noise impacts to visitors of the redeveloped mill location, the developed picnic area, and surrounding established trails.

Visual Resources

Affected Environment - TVA has adapted criteria for classifying the quality and value of scenery from a management system developed by the U.S. Forest Service. The classification process is also based on fundamental methodology and descriptions adapted from a Forest Service publication, *Landscape Aesthetics, A Handbook for Scenery Management*. The process and criteria are used to compare the value of scenery to other resource values during inventory and land planning tasks. These are also used to evaluate the extent and magnitude of visual changes that could result from proposed projects. In addition, they can be useful to help establish management objectives for improving or maintaining the scenic quality of managed lands.

The proposed project consists of issuing a long term easement of 367 acres of TVA-managed public lands, the redevelopment of a historic cotton mill, and the relocation of SR 287 on the Caney Fork River (Great Falls Reservoir) near in Warren County, Tennessee. The site is mostly undeveloped, with the exception of the cotton mill, state roadway, and recreation amenities such as hiking trails and picnic areas.

The visual character of the project area is of a steep Caney Fork river gorge with numerous waterfalls and rock bluffs. Surrounding the river are heavily vegetated slopes which are mainly unaltered by human development and have the ability to absorb additional minor human alterations. An abandoned, three story brick cotton mill and supporting structures are located on the southern bank of the river. Additionally, SR 287 and a developed picnic area are adjacent to the cotton mill. Further away from the Caney Fork River, the remainder

of the 367 acre parcel is heavily wooded with minimal development. The main exceptions are the powerlines and associated rights of way clearing which stretch along the southeastern portion of the property.

The physical, biological, and cultural features of an area combine to make the visual landscape character both identifiable and unique. Scenic integrity indicates the degree of unity or wholeness of the visual character. Scenic attractiveness is the evaluation of outstanding or unique natural features, scenic variety, seasonal change, and strategic location. Where and how the landscape is viewed would affect the more subjective perceptions of its aesthetic quality and sense of place. Views of a landscape are described in terms of what is seen in foreground, middleground, and background distances. In the foreground, an area within one half mile of the observer, details of objects are easily distinguished in the landscape. In the middleground, normally between a mile and four miles from the observer, objects may be distinguishable but their details are weak and they tend to merge into larger patterns. Details and colors of objects in the background, the distant part of the landscape, are not normally discernible unless they are especially large and standing alone. The impressions of an area's visual character can have a significant influence on how it is appreciated, protected, and used. The scenic attractiveness of the project area was defined as "common"; meaning the area is one where the land forms, rock, vegetation patterns, water, and other features have ordinary or common visual quality. These areas have generally positive but typical attributes, with a basic variety of forms, colors, and textures that are normally seen throughout the landscape. While the waterfalls within the Caney Fork River are a unique and distinctive feature to the area, the surrounding state highway and transmission lines detract from the overall attractiveness.

Visual consequences are examined in terms of visual changes between the existing landscape and proposed actions, sensitivity of viewing points available to the general public, their viewing distances, and visibility of proposed changes. Scenic integrity indicates the degree of intactness or wholeness of the landscape character. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty, and the aesthetic sense of place. The scenic integrity of the project area was defined as "moderate", meaning areas where the valued landscape character appeared to be slightly altered. Noticeable deviations must be visually subordinate to the landscape being viewed, and borrow much of the natural form, line, color, texture, and pattern.

The value class of a landscape is determined by combining the levels of scenic attractiveness, scenic integrity and visibility. The scenic value class for the project site would be defined as "good"; which are areas with attractive but common scenic quality. Minor human alteration may be seen in the foreground but is barely noticeable in the middle ground. These areas have relatively high visibility from both land and water.

Environmental Consequences – Under Alternative A, TVA would not issue a 40 year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. TDEC would not restore and repurpose the historic cotton mill and TDOT would not relocate SR-287. There would be no change in visual impacts from current conditions.

Under Alternative B, TVA would grant TDEC a 40 year easement over 367 acres, for the long term management of TVA lands. The easement would provide the State Park certainty in its management of TVA lands, as well as allow it to secure financing for future

improvements. TVA would also approve the rehabilitation of the cotton mill and the relocation of SR-287.

The refurbishment of the cotton mill would be seen in the foreground by recreating visitors. However, the overall planned refurbishment for the cotton mill keeps the same shape and dimension of the existing building, so views at middleground distances by recreation users along the river would be unaltered. Through traffic would be moved away from both the cotton mill and from the unique waterfalls with the relocation of SR-287. There still would be parking next to the mill, but the number of spaces would be kept to a minimum. This decrease in traffic would be visually beneficial to park users.

Potential negative visual impacts could occur at the two road crossing on the Collins River Nature Trail. However, as the scenic attractiveness of the trail has already been impacted by the overhead transmission lines, impacts from the road would be insignificant.

The redevelopment of the mill and relocation of the road would likely not reduce the overall scenic class from a value of "good". During the construction period there may be noticeable visual impacts due to an increase in personnel, equipment, and materials on-site. This will be temporary until all activities are complete. Therefore, the proposed actions would result in minor and insignificant visual impacts from the construction, operation, and maintenance of these facilities.

Transportation

Affected Environment - The project area is accessible from SR 287 in Warren County. The proposed project would realign SR 287 away from the historic Great Falls Cotton Mill and spring castle as part of the redevelopment of the Great Falls Cotton Mill. A traffic impact analysis for the proposed realignment of the portion of SR 287 was conducted. The site is located between log mile 38.71 and log mile 39.31, generally located east of Bluff Road to west of the Great Falls Dam.

The traffic impact analysis considered the existing traffic operations along the 1.2-mile long section of SR 287 including the existing and future level of service along the roadway and a review of available motor vehicle collision data. The analysis found that the proposed realignment will maintain the existing level of service (LOS) and should not negatively impact the safety operations of the roadway.

Level of Service (LOS)

Based on traffic data available from the Tennessee Department of Transportation (TDOT) (<https://www.tdot.tn.gov/APPLICATIONS/traffichistory>), the estimated Annual Average Daily Traffic (AADT) on SR 287 in the study area is approximately 1,400 vehicles per day (VPD). The AADT is made up of the average 24-hour traffic volume at a location over an entire year and is a method of reporting the average daily bidirectional traffic crossing a point on a roadway. TDOT and the Federal Highway Administration (FHWA) use LOS standards to represent the overall traffic operations on a roadway. LOS standards are assigned letters to categorize quality of service, with A being the best and F being the worst. The resulting level of service for this anticipated volume and the existing geometric condition on SR 287 is a LOS D, which is acceptable for roadway traffic operations.

The estimated trips from the proposed redevelopment are expected to be minimal and should not adversely impact the current traffic operations of SR 287. The anticipated level of service on the realigned section, based on the previously completed feasibility study

(Florence) and the anticipated trips from the proposed redevelopment, should remain at LOS D.

Roadway safety review

A high-level review of the available motor vehicle collision (MVC) data was conducted as part of this analysis by utilizing the Enhanced Tennessee Roadway Information Management System (ETRIMS) database. MVC data were reviewed from 2012-2017. A total of four MVCs on this section of roadway was reported over the 5-year period, with all incidents occurring in 2016. Out of the four reported MVCs, three of the incidents were related to roadway departures. The proposed realignment plans, which include wider, paved shoulders should help to reduce the opportunity for this type of incident.

Environmental Consequences – Under Alternative A, TVA would not issue a 40-year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. TDEC would not restore and repurpose the historic cotton mill and TDOT would not relocate SR 287. Transportation activity and access would not change.

Under Alternative B, TVA would issue a permanent easement to the State of Tennessee allowing the Department of Transportation (TDOT) to reroute a portion of the SR 287 away from the historic mill location for better development of the property and to improve access.

Based upon the review of the proposed realignment plans, available traffic data, and motor vehicle collision data; the proposed realignment of SR 287 should maintain the existing level of service and provide for a safer corridor operation than what currently exists. It is important to note that the purpose of the realignment of SR 287 is to provide a safer and more accessible environment to visitors of the proposed inn at the historic Great Falls Cotton Mill and is not focused on capacity. While the LOS is projected to remain the same, by relocating the roadway, through traffic would be removed from the cotton mill, spring castle and associated developed recreation facilities. The effects of removing the traffic volume would have a beneficial impact on visitor safety and overall visitor experience.

Socioeconomics

Affected Environment - The population of Tennessee grew by approximately 43 percent between 1980 and 2016, from 4.6 million to about 6.5 million. In comparison, the population of Warren County grew by 23 percent, while White County's population increased by 35 percent. The most rapid growth in each of the populations occurred during the 1990s. Table 3.3 presents the population and percentage change in population for Warren County, White County, and the State of Tennessee. The historical population of the United States is provided for comparison purposes.

Table 3.3. Population of Warren County, White County, Tennessee, and the US, 1980-2016

Place	1980	1990	2000	2010	2016
Warren County	32,653	32,992	38,276	39,839	40,099
<i>Percentage change</i>		1.0%	16.0%	4.1%	0.7%
White County	19,567	20,090	23,102	25,841	26,373
<i>Percentage change</i>		2.7%	15.0%	11.9%	2.1%
United States (thousands)	226,542	248,718	281,422	308,746	318,857
<i>Percentage change</i>		9.8%	13.1%	9.7%	3.3%
Tennessee	4,591,120	4,877,185	5,689,283	6,346,105	6,548,009
<i>Percentage change</i>		6.2%	16.7%	11.5%	3.2%

Source: US Census Bureau's 2012-2016 American Community Survey (ACS) 5-year estimates program (Census, 2017).

Population projections for counties in Tennessee are developed by the Tennessee State Data Center. These projections show Warren and White counties continuing to experience growth over the next several decades, albeit at a slower rate than those projected for the state as a whole. Table 3.4 presents these projections.

Table 3.4. Population Projections for Warren County, White County, and Tennessee, 2020-2070

	2020*	2030	2040	2050	2060	2070
Warren County	40,773	41,068	41,082	41,228	41,759	42,650
<i>Percentage change</i>	2.3%	0.7%	0.0%	0.4%	1.3%	2.1%
White County	27,267	28,360	28,999	29,475	29,908	30,297
<i>Percentage change</i>	5.5%	4.0%	2.3%	1.6%	1.5%	1.3%
Tennessee	6,883,347	7,390,535	7,853,224	8,341,055	8,870,988	9,443,390
<i>Percentage change</i>	8.5%	7.4%	6.3%	6.2%	6.4%	6.5%

Source: Tennessee State Data Center, 2017.

*Change is from the 2010 population shown in Table 3.3.

Table 3.5 presents additional demographic information for the study area. As shown below, the populations of Warren and White counties are predominately white and living in rural areas. The median age in Warren County is 39.9 years, while White County has a slightly older median age of 43.5 years. High school graduation rates in the counties are somewhat lower than that of the state as a whole.

Table 3.5. Demographics of Warren County, White County, and Tennessee

	Warren County	White County	Tennessee
Median Age	39.9	43.5	38.5
High School Graduate or Higher	78.6%	82.2%	86.0%
<i>Rural/Urban, 2010*</i>			
Inside Urban Area	38.6%	21.8%	66.4%
Inside Rural Area	61.4%	78.2%	33.6%
<i>Race and Ethnicity</i>			
White	91.9%	96.2%	77.8%
Black or African American	1.1%	1.8%	16.8%
Other Races	3.1%	0.1%	3.4%
Two or More Races	3.8%	1.9%	2.0%
Hispanic or Latino (any race)	8.5%	2.3%	5.0%

Sources: Unless otherwise noted, data are from the US Census Bureau's 2012-2016 American Community Survey (ACS) 5-year estimates program (Census 2017).

*US Census 2010 decennial census (Census, 2012).

The housing units in White County were slightly older than those of Tennessee as a whole, with a median year built of 1981 and 1982, respectively. Warren County's housing units were somewhat older, with a median year built of 1976. Housing units within White and Warren counties tend to be owner-occupied, rather than renter-occupied, at a higher rate than those in Tennessee as a whole. The median value of owner-occupied housing in Tennessee was more than roughly \$45,000 to \$50,000 greater than the median value of housing in Warren and White counties, which had median values of \$101,800 and \$96,400, respectively. Median gross rent in the Tennessee as a whole was \$782 a month. Rents in the local counties were lower: Warren's median rent was \$597 per month, while White's was \$637 a month. Table 3.6 presents the general housing characteristics of the project area.

Table 3.6. Housing Characteristics of Warren County, White County, and Tennessee

	Warren County	White County	Tennessee
Total Housing Units	17,834	11,607	2,873,478
Median Year House Built	1976	1981	1982
Percent Owner-Occupied	69.2%	77.6%	66.3%
Median Value, Owner-occupied Housing	\$101,800	\$96,400	\$146,000
Median Gross Monthly Rent, Renter-occupied Housing	\$597	\$637	\$782

Source: US Census Bureau's 2012-2016 American Community Survey (ACS) 5-year estimates program (Census, 2017).

The Bureau of Labor Statistics (BLS) compiles labor force data at various geographic levels. A member of the labor force is one who is either employed or is actively seeking work. For the project area, the county is the smallest unit of geography for which BLS data are available. In December 2017, Warren County had a labor force of 17,003 persons, with an unemployment rate of 3.2 percent. Median household income during the 2012 through 2016 period was \$36,245. Over that period of time, 20.7 percent of the population was identified as being below the poverty level. White County had a labor force of 11,924 in December 2017, with an unemployment rate of 3.3 percent. During the 2012 through 2016

period, median household income was \$35,989, with 18.1 percent below the poverty level. Table 3.7 below shows the median household income, percentage of individuals below the poverty level, labor forces, and unemployment rates for Warren and White counties and the State of Tennessee.

Table 3.7. Income, Poverty, and Employment of Warren County, White County, and Tennessee

Place	Warren County	White County	Tennessee
Median Household Income ¹	\$36,245	\$35,989	\$46,574
Individuals Below Poverty Level ¹	20.7%	18.1%	17.2%
Labor Force, BLS December 2017 ²	17,003	11,924	3,202,657
Unemployment Rate, December 2017 ²	3.2%	3.3%	3.1%

Sources:

¹US Census Bureau's 2012-2016 American Community Survey (ACS) 5-year estimates program (Census, 2017).

²US Bureau of Labor Statistics (BLS, 2018). Data are not available at the town level. Figures are preliminary.

Workers in the study area are most frequently employed in the manufacturing industry. The educational services, health care and social assistance industries are also a common industry of employment within Warren and White counties. Table 3.8 below summarizes the industries of employed workers within Warren and White counties and the State of Tennessee.

Table 3.8. Employment by Industry (a) for Warren County, White County, and Tennessee

	Warren County	White County	Tennessee
Agriculture, forestry, fishing, hunting, mining	3.6%	3.4%	1.0%
Construction	5.9%	6.9%	6.3%
Manufacturing	25.7%	22.3%	13.0%
Wholesale trade	2.2%	2.4%	2.6%
Retail trade	13.6%	12.0%	12.2%
Transportation, warehousing, and utilities	5.3%	7.3%	6.3%
Information	1.4%	1.0%	1.9%
Finance, insurance, real estate, rental, leasing	3.8%	3.2%	5.7%
Professional, scientific, management, administrative, waste management services	5.5%	4.9%	9.5%
Educational services, health care, social assistance	19.8%	20.8%	22.7%
Arts, entertainment, recreation, accommodation, food services	4.9%	7.2%	9.4%
Other services, except public administration	3.6%	3.3%	4.9%
Public administration	4.5%	5.4%	4.4%

Source: US Census Bureau's 2012-2016 American Community Survey (ACS) 5-year estimates program (Census, 2017).

Environmental Consequences – Under Alternative A, TVA would not issue a 40-year recreation easement to TDEC for continued operation of the recreation facilities on TVA property. TDEC would continue to manage the park under the existing license. TDEC would not restore and repurpose the historic cotton mill and TDOT would not relocate SR-

287. Socioeconomic resources in the vicinity of Rock Island State Park would be unchanged by Alternative A.

Under Alternative B, TVA would grant TDEC a 40-year easement over 367 acres for the long-term management of TVA lands, which would support recreation activities at Rock Island State Park. State Park visitors have a positive economic impact on the local economy. A study on the economic impact of Tennessee State Parks analyzed spending per trip by visitors. The average expenditures in 2009 are shown in Table 3.9 below. Estimates in 2018 dollars, after adjusting for inflation, are also provided.

Table 3.9. Average Expenditure per Trip of Tennessee State Park Visitors

Category	Average Expenditure, 2009	Average Expenditure, Inflated to 2018\$
Food & Beverages	\$56.79	\$65.51
Transportation	\$22.61	\$26.08
Other Expenditures	\$22.45	\$25.90
Lodging	\$17.36	\$20.03
Fishing	\$3.96	\$4.57
Boating	\$3.65	\$4.21
Total	\$126.82	\$146.30

Source: Fly, 2010.

TVA would permit two construction projects under Alternative B: the relocation of SR 287 and the renovation of the historic mill into an inn. The spending associated with these projects would have direct impacts, as well as indirect and induced impacts (also called multiplier impacts), on the state and local economies. Indirect impacts include those that arise from business to business spending, while induced impacts include spending related to changes in consumer income.

A feasibility study prepared for TDOT indicates that the estimated cost of the realignment is \$1,528,600, of which \$25,000 is to obtain a permanent easement on TVA property (Florence and Hutcheson). Such an expenditure would result in purchases from suppliers and direct employment. This spending then would percolate through the economy as multiplier impacts. Thus, the \$1.5 million expenditure on the SR 287 realignment would have an even greater impact on the local and state economy. While a feasibility study was not available for the proposed work at the mill, this multiplier impact would also be seen with the renovation of the historic mill and any ancillary construction. The impacts associated with the construction projects would be short-term ones, limited to the duration of the projects.

While the exact mix of employment that would be associated with the relocation of SR-287 and the renovation of the historic mill is unknown, there are a number of occupations that could reasonably be expected to be involved in the projects. Table 3.10 below presents a sample of these occupations along with the 2016 annual mean wage reported by the BLS for the North Central Tennessee Nonmetropolitan Area in which Warren and White counties lie.

Table 3.10. 2016 Annual Mean Wage by Construction-Related Occupation, North Central Tennessee Nonmetropolitan Area

Occupation	2016 Annual Mean Wage
Civil Engineers	\$65,080
Construction Laborers	\$27,800
Construction Managers	\$90,570
Paving, Surfacing, and Tamping Equipment Operators	\$30,580
Electricians	\$47,580
Painters, Construction and Maintenance	\$30,880
Plumbers, Pipefitters, and Steamfitters	\$46,510

Source: BLS, 2017a.

Note: This table represents a sample of occupations that could reasonably be expected to be associated with the relocation of SR-287 and the renovation of the historic mill.

As noted previously, the effects of removing the traffic volume would have a beneficial impact on visitor safety and overall visitor experience. If this beneficial impact results in an increase in park visitors, then there would be the expectation of positive economic impacts over the long-term, beyond the initial construction period.

The restoration and use of the historic mill for an inn with a restaurant and meeting spaces would have a more significant long-term economic impact on the local economy. As with the construction projects, the exact mix of employment that would be associated with the operation of the inn, restaurant, and meeting rooms is unknown. However, there are a number of occupations that could reasonably be expected to be involved. Table 3.11 below presents a sample of these occupations along with the 2016 annual mean wage reported by the BLS.

Table 3.11. 2016 Annual Mean Wage by Hospitality-Related Occupation, North Central Tennessee Nonmetropolitan Area and State of Tennessee

Occupation	2016 Annual Mean Wage
Building and Grounds Cleaning and Maintenance Occupations ¹	\$23,950
Chef/Head Cook ²	\$33,850
Cook, Restaurant ¹	\$20,810
Diswashers ¹	\$18,850
Food Services Manager ¹	\$40,770
Hotel Desk Clerk ¹	\$18,610
Lodging Manager ²	\$36,670
Maids and Housekeeping Cleaners ¹	\$18,950
Waiters and Waitresses ¹	\$20,880

Sources:

¹BLS, 2017a.

²BLS, 2017b. State of Tennessee data provided. Data were not available for the North Central Tennessee Nonmetropolitan Area.

Note: This table represents a sample of occupations that could reasonably be expected to be associated with the operation of an inn and restaurant.

As described above and shown in Table 3.9, visitors to Tennessee State Parks make expenditures in numerous areas that positively impact local economies. Therefore, it is important to have an estimate of the number of visitors the proposed inn may attract. The average occupancy rates observed at inns at other Tennessee State Parks, along with the average hotel occupancy in the state, were utilized to develop a range of potential occupancy scenarios for the proposed inn at Rock Island State Park. The scenarios used for the evaluation include:

- Low Scenario: Average occupancy rate of 35.6 percent observed during FY 2011-2012 at Tennessee State Park inns. This is considered the low scenario since many inns were considered to be in need of refurbishment at that time, which would have decreased their desirability.¹
- Mid-Range Scenario: Average occupancy rate of 48 percent, as observed at the State Park inn with the highest occupancy rate (Fall Creek Falls).²
- High Scenario: Average statewide hotel occupancy rate of 57 percent.³

The Rock Island Old Mill Site Concept Plan indicates the proposed renovation is anticipated to have 15 rooms, with a mix of rooms with one and two beds.⁴ Based on the scenarios outlined above, a range of occupied nights was developed. To estimate potential revenues associated with the occupied nights, the room rates at other State Park inns, as posted on their websites' reservations systems in March 2018, were examined and averaged. The average nightly rate for a room with a king bed was found to be \$95.25 per night, while the average rate for a room with two double beds was \$83.40 per night. Table 3.12 summarizes the expected number of occupied nights and revenue associated with the inn for each of the scenarios

Table 3.12. Estimated Potential Annual Occupancy Levels and Revenue Associated with 15-Room State Park Inn

Room Type ¹	Low—Average of State Park Inns (36% ²)		Mid-Range—Falls Creek Inn Average (48% ²)		High—Statewide Hotel Average (57% ²)	
	Occupied Nights	Revenue ³	Occupied Nights	Revenue ³	Occupied Nights	Revenue ³
King (6 units)	781	\$74,365	1,051	\$100,127	1,248	\$118,901
2 Doubles (9 units)	<u>1,171</u>	<u>\$97,669</u>	<u>1,577</u>	<u>\$131,505</u>	<u>1,872</u>	<u>\$156,162</u>
Total, Inn	1,952	\$172,034	2,628	\$231,632	3,121	\$275,063
Estimated State Tax (9.75%)		\$16,773		\$22,584		\$26,819
Estimated County Tax (5%)		\$8,602		\$11,582		\$13,753

Sources:

¹Room types from Rock Island Old Mill Concept Site Plan (ESA, 2016).

²Tennessee State Parks, 2013.

¹ Tennessee State Parks, 2013.

² *Ibid.*

³ *Ibid.*

⁴ ESA, 2016.

³Revenue from based on calculated occupied nights shown and rates posted on the Tennessee State Parks web-based reservation system (Tennessee State Parks, 2018).

As shown in Table 3.12, total revenues associated with occupied nights at the inn are expected to be between \$172,034 per year and \$275,063 per year. These revenues will vary directly with room rates and actual occupancy levels achieved. Estimated state taxes, assuming a 9.75 percent tax rate, associated with these revenues would range from \$16,773 to \$26,819 per year. County revenue, assuming a 5 percent tax rate, associated with these revenues would range from \$8,602 to \$13,753 per year.

The estimates of occupied nights were then used to develop an estimate of potential trips, assuming an average of two nights per trip. These trip estimates were combined with the per trip expenditures shown in Table 3.8 to estimate the total potential impact associated with visitors to the proposed inn. These estimates exclude impacts associated with the restaurant and meeting space, as at this time there is not sufficient information available to project such impacts. Table 3.13 presents the potential range of local expenditures, excluding state and local taxes, which could be associated with a 15-room Tennessee State Park inn.

Table 3.13. Estimated Potential Impacts to Economy from Annual Occupancy Levels Associated with 15-Room State Park Inn

	Estimated Occupied Nights	Estimated Trips (2 day average)	Expenditures (Direct Impact)	Indirect and Induced Impact	Total Impact
Low Scenario					
Estimated Inn					
Lodging	1,952	976	\$172,034	\$190,958	\$362,991
Food & Beverages			\$63,935	\$70,968	\$134,904
Transportation			\$25,455	\$28,255	\$53,710
Other Expenditures			<u>\$25,275</u>	<u>\$28,055</u>	<u>\$53,330</u>
<i>Total</i>			\$286,699	\$318,236	\$604,934
Mid-range Scenario					
Estimated Inn					
Lodging	2,628	1,314	\$231,632	\$257,111	\$488,743
Food & Beverages			\$86,085	\$95,554	\$181,639
Transportation			\$34,273	\$38,043	\$72,316
Other Expenditures			<u>\$34,031</u>	<u>\$37,774</u>	<u>\$71,805</u>
<i>Total</i>			\$386,021	\$428,483	\$814,503
High Scenario					
Estimated Inn					
Lodging	3,121	1,560	\$275,063	\$305,320	\$580,383
Food & Beverages			\$102,226	\$113,470	\$215,696
Transportation			\$40,699	\$45,176	\$85,876
Other Expenditures			<u>\$40,411</u>	<u>\$44,857</u>	<u>\$85,268</u>
<i>Total</i>			\$458,399	\$508,823	\$967,223

Source: Based on average trip expenditures shown in Table 3.8 and potential occupancy levels and revenues shown in Table 3.12.

As shown in Table 3.13 above, the total impact from visitors to the proposed inn is estimated to range from roughly \$600,000 to \$970,000 per year. These impacts include spending at the inn, restaurants, convenience and grocery stores, and gas stations. The impacts shown also include multiplier impacts that accrue as spending percolates through the economy.

Cumulative Impacts

Cumulative impacts are defined in the Council on Environmental Quality's regulations at 40 C.F.R. § 1508.7 as follow:

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past actions that have already occurred and present actions are integrated into the existing baseline conditions discussed above. The parcel on which Rock Island State Park is developed was restricted to be used solely for commercial recreation purposes. Future commercial recreation facilities requiring TVA approval at the property could be requested. Additionally, the parcel is zoned for commercial recreation in the Great Falls Reservoir Land Management Plan (2017). Due to the deed restrictions in place which ensure the property will be managed within the constraints of commercial recreation and the TVA zoning allocation, the cumulative effects of TVA issuing the easement should be insignificant.

CHAPTER 4 – SUPPORTING INFORMATION

TVA Preparers

Elizabeth Hamrick, Biological Compliance, Terrestrial Zoologist, B.A. in Biology and Anthropology, M.S. in Wildlife and Fisheries Science, 17 years in field biology, 8 years in NEPA analysis.

Sara McLaughlin, Biological Compliance, Terrestrial Zoologist, B.S. in Wildlife and Fisheries Sciences with a minor in Forestry, 11 years in field biology, 5 years conducting habitat surveys and NEPA analysis.

Mark Odom, Aquatic Resources and Threatened and Endangered Species, Watershed Representative, Natural Resources, MS in Biology, 20 years in Aquatic and Terrestrial Biology and Conservation

Kim Pilarski-Hall, Biological Compliance, Wetlands Specialist, M.S. in Geography, Minor in Ecology, 22 years in wetland assessments and delineations.

Craig Philips, Biological Compliance, Aquatic Ecology and Threatened and Endangered Species, M.S. and B.S. in Wildlife and Fisheries Science, 7 years sampling and hydrologic determinations, 5 years in environmental reviews.

Marianne Shuler, Cultural Compliance, Archaeologist, B.A. Religion, emphasis in Middle Eastern Archaeology, 12 years in cultural resource management.

Lesley White, Recreation and Shoreline Management, Recreation Specialist, B.S. and M.S. in Biological Sciences, 11 years in Land Management and Permitting.

W. Doug White, NEPA Compliance, Document Development, B.S. in Forestry, 15 years in water resources management and NEPA compliance.

Carrie Williamson, Flood Risk, Program Manager, B.S. in Civil Engineering, M.S. in Civil Engineering, Professional Engineer, Certified Floodplain Manager, 5 years in Floodplains and Flood Risk, 3 years in River Forecasting, 11 years in Compliance Monitoring.

Additional Preparers

Diane Reilly, Economist, Socioeconomic Analysis, M.A. in Economics, 23 years in environmental consulting evaluating economic, socioeconomic, and recreation issues. (TRC Environmental Corporation)

Jonathan W. Smith, P.E., IMSA II, Transportation Analysis, 15 years in Civil Engineering specializing in traffic operations, signal design, and traffic studies. (Barge Design Solutions, Inc.)

Literature Cited

Brady, J., T.H. Kunz, M.D. Tuttle and D. Wilson, 1982. Gray bat recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado 80205. 143 pp.

ESA (2016). Rock Island Old Mill Concept Site Plan.

Florence and Hutcheson (undated). Feasibility Study: State Route 287 Realignment.

- Fly, J. Mark, Burton C. English, R. Jamey Menard, and Kim L. Jensen (2010). *Estimated Economic Impacts of Tennessee's State Parks: An Executive Summary*. Retrieved March 1, 2018 from URL <http://web.utk.edu/~markfly/documents/Tennessee%20State%20Park%20Economic%20Impacts.pdf>.
- Gibbons, W. and M. Dorcas. 2005. *Snakes of the Southeast*. The University of Georgia Press. Athens, Georgia. 253 pp.
- Harvey, M. J., Altenback, J. S, and T. L. Best. 2011. *Bats of the United States and Canada*. The Johns Hopkins University Press. Baltimore, Maryland. 202 pp.
- Kurta, A, S. W. Murray, and D. H. Miller. 2002. Roost selection and movements across the summer landscape. In Kurta, A. and J. Kennedy, eds. *The Indiana Bat: Biology and Management of an Endangered Species*. Bat Conservation International, Austin, Texas.
- Linzey, A.V. & NatureServe (Hammerson, G., Whittaker, J.C. & Norris, S.J.). 2008. *Neotoma magister*. The IUCN Red List of Threatened Species 2008: e.T14581A4446084. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T14581A4446084.en>. (Accessed 23 February 2018).
- National Geographic. 2002. *Field Guide to the Birds of North America*. Fourth Edition. National Geographic Society. Washington, D.C. 480 pp.
- National Park Service. 2017. *The Secretary of Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*. Washington, D.C.: Grimmer
- NatureServe. 2016. *Comprehensive Report Species – Cryptobranchus alleganiensis*. Available online: <http://explorer.natureserve.org/index.htm> (Accessed 23 February 2018).
- NatureServe. 2018. *Comprehensive Report Species – Gyrinophilus palleucus*. Available online: <http://explorer.natureserve.org/index.htm> (Accessed 23 February 2018).
- Pruitt, L., and L. TeWinkel. 2007. *Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision*. U.S. Fish and Wildlife Service, Fort Snelling, MN. 258 pp.
- Thomason 2017. *Great Falls Cotton Mill Rehabilitation Report*, Warren County, Tennessee. Report prepared for the Tennessee Valley Authority, Knoxville, Tennessee. (Thomason and Associates)
- Thomason. 2016. *Historical and Architectural Survey, Great Falls Road (State Route 287) Realignment Project, Rock Island State Park, Warren County, Tennessee*. Report submitted to the Tennessee Valley Authority, Knoxville, Tennessee (Thomason and Associates)

- Tennessee State Data Center: Boyd Center for Business and Economic Growth (2017). Annual Tennessee County Population Projection Totals. Retrieved February 28, 2018 from URL <http://tndata.utk.edu/sdcpopulationprojections.htm>.
- Tennessee State Parks (2013). *Tennessee State Parks Business and Management Plan*. Retrieved March 1, 2018 from URL <http://tnstateparks.com/assets/pdf/business-management-plan.pdf>.
- Tennessee State Parks (2018). Tennessee State Park Reservations. Retrieved March 1, 2018 from URL <https://tnstateparks.com/about/reservations>
- Tennessee Valley Authority (TVA). 1981. *Class Review of Certain Repetitive Actions in the 100-Year Floodplain*. 36 CFR §22845-46.
- Tennessee Valley Authority (TVA). 2005. TVA Visual Resources, Scenic Value Criteria for Scenery Inventory and Management.
- Titus, Keifer. 2015. *Corynorhinus rafinesquii* Rafinesque's Big-eared Bat. Available online: http://animaldiversity.org/accounts/Corynorhinus_rafinesquii/ (Accessed 23 February 2018).
- Tuttle, M. D. 1976. Population ecology of the gray bat (*Myotis grisescens*): philopatry, timing, and patterns of movement, weight loss during migration, and seasonal adaptive strategies. Occasional Papers of the Museum of Natural History, University of Kansas, 54:1-38.
- U.S. Bureau of Labor Statistics (BLS) (2017a). *May 2016 State Occupational Employment and Wage Estimates: North Central Tennessee Nonmetropolitan Area*. Retrieved March 9, 2018 from URL https://www.bls.gov/oes/2016/may/oes_4700003.htm.
- U.S. Bureau of Labor Statistics (BLS) (2017b). *May 2016 State Occupational Employment and Wage Estimates: Tennessee*. Retrieved March 9, 2018 from URL https://www.bls.gov/oes/2016/may/oes_tn.htm.
- U.S. Bureau of Labor Statistics. (2018). Local Area Unemployment Statistics. Retrieved March 7, 2018 from URL <http://data.bls.gov/cgi-bin/dsrv?la>.
- U.S. Census Bureau. (2012). *2010 Census Summary File 2*. February 28, 2018 from URL <http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.
- U.S. Census Bureau (2017) *2012-2016 American Community Survey 5-Year Estimates*. Retrieved February 28, 2018 from URL <http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.
- U.S. Fish and Wildlife Service (USFWS). 2014. Northern Long-eared Bat Interim Conference and Planning. Available online: <https://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf> (Accessed 13 July 2017).
- U.S. Fish and Wildlife Service (USFWS). 2017. 2017 Range-Wide Indiana Bat Summer Survey Guidelines. Available online:

<http://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2015IndianaBattSummerSurveyGuidelines01April2015.pdf> (Accessed 13 July 2017).

U.S. Forest Service, U.S.D.A., 1995. Landscape Aesthetics, A Handbook for Scenery Management. Agriculture Handbook Number 701.

U.S. Water Resources Council, 1978. Guideline for Implementing Executive Order 11988, Floodplain Management.

Whitaker, J.O. 1996. *National Audubon Society: Field Guide to North American Mammals*. Alfred A. Knopf, Inc., New York.

Wampler 2017. Management Summary Archaeological Investigations- Site 40WR125, Great Falls Cotton Mill & Dam, Warren County, Tennessee. Report submitted to the Tennessee Valley Authority, Knoxville, Tennessee (AMEC)

Wampler 2016. Phase I Archaeological Survey Great Falls Cotton Mill, Warren County, Tennessee. Report submitted to the Tennessee Valley Authority, Knoxville, Tennessee. (AMEC)